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Rock Products

DEVOTED TO
Concrete and Manufactured
Building Materials

Vol. VII.

CHICAGO, ILL., MARCH 22, 1908.

No. 9.

CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributors of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material "Universal," "Acme" and "Electrod" Brands Ready Roofing. Get our prices.

Charleston, S. C. Birmingham, Ala. Atlanta, Ga. New Orleans, La.

DEXTER Portland Cement
THE NEW STANDARD
Sole Agents SAMUEL H. FRENCH & CO., Philadelphia



UNION MINING COMPANY

Manufacturers of the Celebrated

MOUNT SAVAGE
FIRE BRICK
GOVERNMENT STANDARD.

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

Lime Kiln and Cement Kiln Construction

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

UNION MINING CO.
Mount Savage, Md.
CAPACITY, 60,000 PER DAY.
ESTABLISHED, 1841.

"RELIANCE" BELT ABSOLUTELY BEST

Chicago Belting Company
MAKERS

67-69 South Canal Street,

SEND US YOUR SPECIFICATIONS.

CHICAGO, ILL.

ALMA
Portland Cement

STANDARD BRAND
OF
MIDDLE WEST.

Specially Adapted to all Reinforced Concrete
and High-Class Work.

Alma Cement Co.
WELLSTON, OHIO



Special Features in This Number.

Convention of the New Jersey Mason Supply Dealers.
The Battle House at Mobile, Ala.
The Thonet Building in New York.
Standard Specifications for the Manufacture of Concrete Blocks.
Great Plant of the Knickerbocker Lime Company,
Philadelphia.

If your story is a
short one, you can
reach thousands in
this space. : :



THE SIDEWALK BRAND

SUCCESSFULLY USED FOR TEN YEARS IN ALL KINDS OF CONCRETE WORK

Send for 72 page Illustrated Catalog No. 25

MARQUETTE CEMENT MANUFACTURING CO.

Marquette Building, Chicago

ROCK PRODUCTS



Peninsular Portland Cement

Acknowledged by competent Architects and Engineers to be unequalled for fineness, wonderful development of strength and sand carrying capacity.

"THE BEST IS THE CHEAPEST"

Address
Peninsular Portland Cement Co.
Jackson, Michigan



THE FOUNDATIONS OF THE NAVY ARE LAID IN NAZARETH PORTLAND CEMENT

NAZARETH FURNISHED BY BENSON, PHILLIPS & COMPANY, NEWPORT NEWS, VA., FOR THE FOLLOWING SHIPS' BOTTOMS:

BATTLE-SHIPS
Kearsarge
Kentucky
Illinois
Missouri
Louisiana
Minnesota
Virginia

CRUISERS
West Virginia
Maryland
Charleston
North Carolina
Montana
MONITORS
Arkansas

CHARLES WARNER COMPANY
WILMINGTON PHILADELPHIA NEW YORK

"LEHIGH" PORTLAND CEMENT



High Tensile Strength, Finely Ground, Light and Uniform in Color.

MANUFACTURED BY THE

Lehigh Portland Cement Co. ALLENTOWN, PA.

Western Office:
725 Rockefeller Bldg.,
CLEVELAND, OHIO

Capacity, 8,000,000 Yearly.

Write for Catalogue.



Manufacturers: Sales Office, Holland Building, St. Louis.

Buckeye Portland Cement Co.

ESTABLISHED 1888.

Manufacturers of the celebrated
"Buckeye" brand of



Portland Cement

"Buckeye" has stood the wear and tear in many important places for the past fifteen years and under the new process of manufacture is now better than ever.

Bellefontaine, Ohio.

ONE GRADE—ONE BRAND



Alpha Portland Cement

The Recognized Standard
American Brand

General Offices: EASTON, PA.

SALES OFFICES:

German National Bk. Bldg., PITTSBURGH.
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Marquette Building, CHICAGO.

Harrison Building, PHILADELPHIA

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St. Paul Bldg., NEW YORK.



CHICAGO "AA"

1,000,000 Barrels Annually

THE LEADING SIDEWALK CEMENT

Factory at Oglesby, near La Salle, Ill., on
C. M. & St. P. R. R., C. B. & Q. R. R., I. C. R. R.,
and C. R. I. & P. R. R., by Switch.

WE MAKE ONE BRAND ONLY. THE BEST THAT CAN BE MADE.

Used in the large bridges at Thebes and Kankakee, Illinois, Hennepin Canal,
Government Post Offices, Locks and Bridges, Chicago Tunnels; and
by principal Railroads, Engineers, Architects, Contractors and
Block Manufacturers.

CHICAGO PORTLAND CEMENT CO.

No. 108 La Salle Street, CHICAGO, ILL.

HYDRATED PORTLAND LIME



IS IDEAL FOR

Waterproofing Concrete Blocks

SAVES MONEY. TRY IT.

FOR INFORMATION AND PRICES, WRITE

CHICKAMAUGA CEMENT CO.,
Sole Manufacturers.
CHATTANOOGA, TENNESSEE

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Concrete and Manufactured
Building Materials

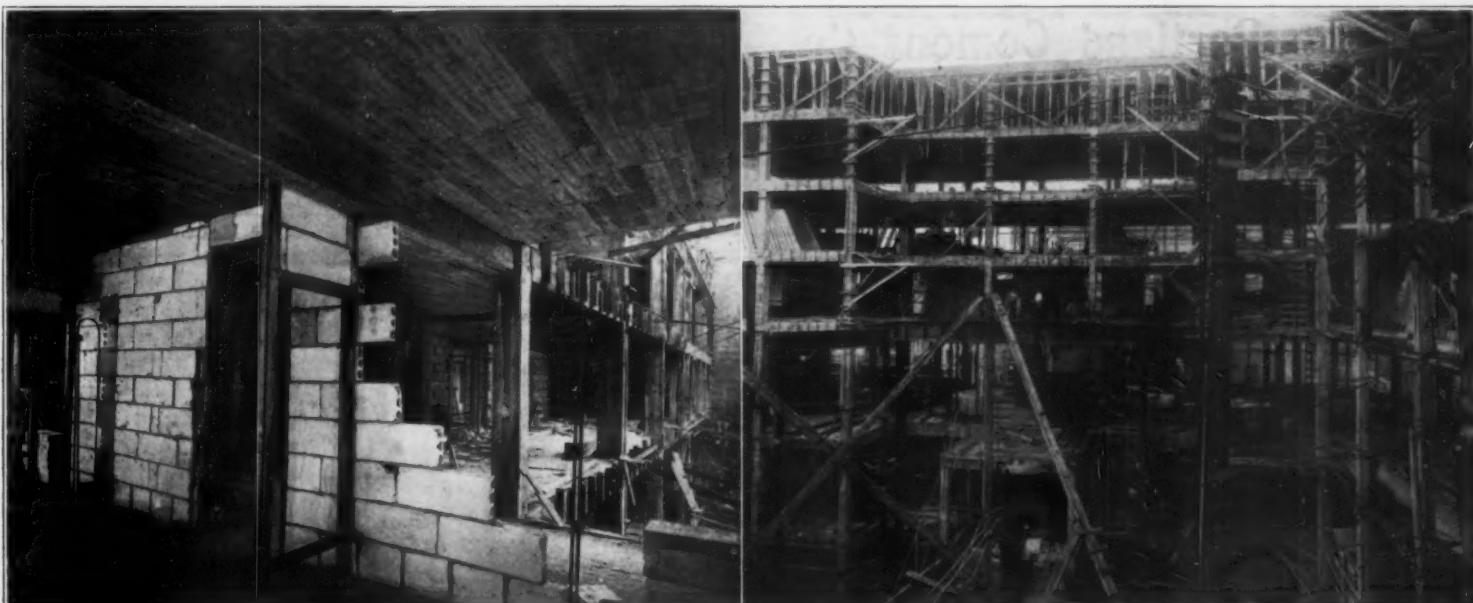
Volume VII.

CHICAGO, ILL., MARCH 22, 1908.

Number 9.

MOBILE'S NEW HOTEL.

The Battle House, Now Being Built, a Fine Example of Reinforced Concrete Construction.



MOBILE, ALA., March 10.—The illustrations here-with, from recent photographs, show the progress of work on the new hotel to be known as the Battle House, of which Colonel Burgess, the well known banker of this city, is the principal owner.

The building, when completed, will represent an outlay of \$1,000,000. The plans were made by F. M. Andrews of Cincinnati, the architect of the Seelbach Hotel at Louisville. All the structural work of the Battle House is reinforced concrete, with the exception of the dome over the lobby and the roof over the convention hall. The American system of reinforcing, consisting of steel rods and wire mesh, is being used. The partition blocks throughout the hotel are the United States Gypsum Company's tile blocks. The Whitehall Portland Cement Company furnished all the cement.

The building is located on the southeast corner of Royal and St. Francis Streets. There will be eight stories above the ground, the exterior design being on the order of the French Renaissance. The street fronts will present a combination of gray pressed brick and Bedford limestone trimmings, with a Harvard pressed-brick body.

The first floor of the building has eight storerooms or shops and a main entrance facing on Royal Street.



THE BATTLE HOUSE, MOBILE.

1. Putting in U. S. Gypsum Co.'s Fire-Resisting Partition Blocks.
2. System of Fireproofing Steel Construction.
3. Exterior View Showing Elevator for Hoisting Materials.

On the St. Francis Street side are two private entrances, one for ladies and one for gentlemen. On the first floor are also located the bar-room, palm-room, grand café and grand lobby.

The second floor is occupied by the state suite, smoking and writing-rooms, private dining-rooms and public parlor, and has also galleries overlooking the grand lobby. The kitchen is also on this floor.

The third, fourth, fifth and sixth floors are given over to guest-rooms, which are provided with baths and all modern conveniences.

On the seventh floor, besides a number of guest-rooms, there is located an Arch convention hall, with a seating capacity of about 750. There are also special kitchen arrangements for serving banquets.

On the eighth or roof-garden floor is provided a large space for roof-garden purposes, with pergola work overhead. A commodious kitchen for serving the roof-garden is also arranged for. In the rear of this story are located the dormitory and conveniences for servants.

The photographs from which the accompanying illustrations were made show the building as it is today. It will not be completed for some time. The General Supply and Construction Company, New York, are the general contractors.

Can Be Used With Absolute Safety



Hundreds of users have
testified to the excellent
results obtained.

Manufactured and Guaranteed by

Omega Portland Cement Company

Jonesville, Michigan

CAPACITY
700,000
BARRELS
ANNUALLY

OFFICE
ALLENTOWN, PA.



STANDARD
SPECIFICA-
TIONS
GUARANTEED

Newaygo Portland Cement Co.

Sales Office: Michigan Trust Building

GRAND RAPIDS, MICH.

Write us for prices. Send us your orders.



**Strength
Uniformity
Satisfaction**

A Dependable Portland Cement

An Unblemished Record for
six years speaks for itself

Wolverine Portland Cement Company
Coldwater, Michigan

C. H. WOOD, Agent, Chamber of Commerce Building, Chicago

WHY?
Egyptian Portland Cement

Every mason likes it.
Works easy.
Excellent color.
High in tensile strength.
Fine ground.
Mill centrally located,
Low freight rates.
Popular price.

We can save you money

Write us your needs

THE BARTLETT CO.

Mills: Fenton, Mich.

Sales Office, Jackson, Mich.

Ask for Information Regarding

“SUPERIOR”

Before you buy
Every Barrel gives



your Cement for 1908.
entire satisfaction.

Write Us for Prices and Tests

Guaranteed to meet the requirements of “Standard Specifications.”

The Superior Portland Cement Co.

Works:

Superior, Lawrence Co., Ohio.
Detroit, Toledo & Ironton Ry., within
switching distance of
C. & O. and N. & W. Rys.

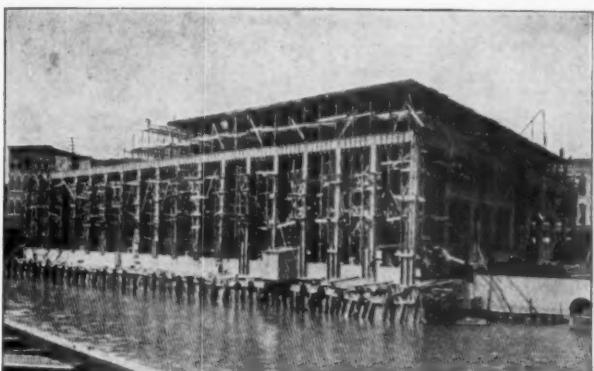
General Offices and Sales Dept.,
Charleston, W. Va.



Medusa Water-Proof Compound

Makes all Concrete Watertight

The foundations and floor in basement, all of cement, in the Bostwick-Braun warehouse, Toledo, O., here illustrated, contain Medusa. Write for pamphlet describing its use.



Write for samples of our Pure White Portland Cement.

Do not accept a substitute, as there are many adulterated compounds on the market.

Sandusky Portland Cement Co.
SANDUSKY, OHIO



**Strength
Durability
Permanence**

Not only laboratory tests, but results in actual work prove the high grade quality of

**Northampton
Portland Cement**

Especially adapted for Cement Blocks, Sidewalks, and all forms of concrete and re-inforced concrete construction.

Northampton Portland Cement Co.

Main Office and Works
Stockertown, Pa.

EDISON Portland Cement Co.



85 per cent. thru 200
98 per cent. thru 100

The Finest Ground Portland Cement Manufactured

"Neat tests are of less value than those of the briquettes made with sand and cement. The fineness of the cement is important, for the finer it is the more sand can be used with it."
[Abstract from "Specifications for Portland Cement," issued by the United States Navy Department, June 12, 1905.]

FINE GRINDING OF PORTLAND CEMENT AND WHAT IT MEANS

For a proper understanding and full appreciation of the importance of fine grinding, it is necessary to explain that Portland Cement (as manufactured in the Lehigh Valley) is made from what is commonly understood as "Cement Rock," with the addition of sufficient limestone to give the necessary amount of lime. The rock is broken down and then ground to a fineness of 80 per cent to 90 per cent through a 200 mesh screen. This ground material passes through kilns and comes out in clinker. This is ground and that part of this finely ground clinker that will pass a 200 mesh screen is cement; the residue is still clinker. These coarse particles or clinkers will absorb water very slowly, are practically inert, and have very feeble cementing properties. The residue on a 100 mesh screen is useless.

Edison Portland Cement is ground 85 per cent through a 200 mesh screen,—10 per cent finer than other brands. This can be verified in any laboratory.

In a barrel of Edison Portland Cement, therefore, you get 85 per cent of Portland Cement and 15 per cent of clinker. In a barrel of other brands you get 75 per cent of cement and 25 per cent of clinker.

If you are buying a ton of coal, would you buy the coal containing 25 per cent of slate, or would you prefer the coal containing but 15 per cent slate?

If, instead, you are buying iron ore, would you not give preference to ore that contained 10 per cent more units of iron?

Another point is worth considering and that is that the Edison Portland Cement Company make but one brand or quality, and that is the best.

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St. James Building, New York.

Arcade Building, Philadelphia.

Machesney Building, Pittsburgh.

Union Building, Newark, N. J.

Post Office Square Bldg., Boston, Mass.

National Bank Bldg., Savannah, Ga.

The Quality that Never Fails

SUNFLOWER PORTLAND CEMENT

Three Great Plants, at IOLA and INDEPENDENCE, KANSAS, making
Perfect Cement, with Unsurpassed Shipping Facilities,
Guarantee Prompt Service.

YOUR CEMENT NEEDS CAN BE SUPPLIED EFFICIENTLY

Daily Capacity of 8,000 Barrels. Write today to

United Kansas Portland Cement Company
General Sales Office: IOLA, KANSAS



**Pennsylvania
Portland
Stands for Quality**



Flint Pebbles and Buhr Stone
Linings.

French Buhr Mill Stones,
Solids and Built.

J. M. Charles,
Sole Agent.

59 Pearl St., NEW YORK, N. Y.

Bolting Cloths, Dufour Swiss
Silk, Fine Wire Cloth.

Mixing and Sifting
Machinery.

"If it is **BAGS** We make them"

FOR LIME, CEMENT
PLASTER AND FEED

IN VALVE OR OPEN MOUTH

The Urschel-Bates Valve Bag Co.
TOLEDO, OHIO

Tell 'em you saw it in ROCK PRODUCTS.

ROCK PRODUCTS

"The Best is None too Good"



HIGHEST GRADE of Portland Cement

Every Barrel Absolutely Uniform.

R. R. facilities especially adapted for prompt shipments in the northwest.

Capacity 1,500,000 bbls. Yearly.

NORTHWESTERN STATES PORTLAND CEMENT COMPANY
MASON CITY, IOWA.



**High Tensile Strength
Light Uniform Color
Finely Ground**

CASTALIA PORTLAND CEMENT CO.
PITTSBURG, PA.

PLANT:
CASTALIA, ERIE CO., OHIO.
CAPACITY:
2,000 BARRELS DAILY.

CHARLES L. JOHNSON, Sales Mgr.
CASTALIA, OHIO

Caution!

Do Not Buy from Infringers of this Decision, given in the United States Circuit Court for the Northern District of Illinois, Eastern Division, Nov. 18, 1907.

"The Gandy Belting Co. of Baltimore City is the true and lawful owner of the goodwill of its business of manufacturing and selling Red Stitched Cotton Duck Belting accompanied by the distinctive trade mark, trade name or trade designation: 'Gandy' or 'Gandy's' applied thereto or used in connection therewith." *** "It is further decreed that the defendant be perpetually restrained from selling, advertising, or supplying stitched cotton duck belting printed or dyed red, accompanied by the word 'Gandy' affixed or applied thereto."

There is but one Gandy belt; no other can show such conclusive proofs of superior efficiency, economy, and durability. Send for our booklet.

GANDY BELTING CO., Baltimore, Md.

The Ironton Portland Cement Co.

Manufacturers of the

Celebrated Limestone Brand of Portland Cement

Used by the Railroads in Kentucky, Ohio, West Virginia, and Virginia during the past five years.

Cement as finely ground as any on the market. Guaranteed to pass all the standard specifications.

Plant located at Ironton, O., within easy access to seven States, namely, Ohio, Indiana, Kentucky, West Virginia, Virginia, Tennessee and North Carolina.

Shipments via the N. & W. Ry., C. & O. Ry., C. H. & D. Ry., D. T. & I. Ry. or Ohio River.

Write for Prices



The Ironton Portland Cement Co.
Ironton, Ohio

"KOSMOS"

Kosmos Portland Cement is the product of a model plant, using high grade raw materials and under the direction of a staff of experienced cement engineers.

It is guaranteed the equal of any American Brand of Portland Cement and will be found to run uniform



in color, strength and fineness. It is suitable for any class of work and is especially recommended where the requirements are exacting.

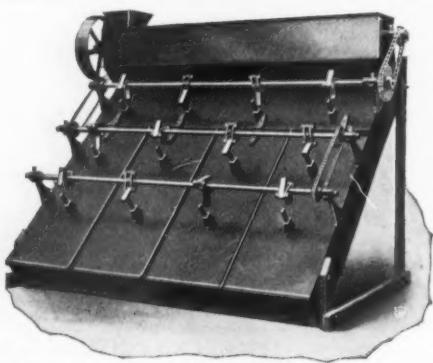
Manufactured by the

Kosmos Portland Cement Co., Inc.

BUSINESS OFFICE: 614-616 Paul Jones Bldg., Louisville, Ky.

WORKS: Kosmosdale, Jefferson Co., Ky.

Tell 'em you saw it in **ROCK PRODUCTS**.



NEWAYCO SEPARATOR

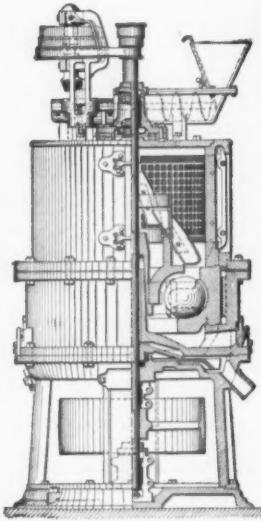
INCLINED VIBRATING SCREEN

THE ONLY SHAKING SCREEN
THAT WILL NOT SHAKE
ITSELF TO PIECES

SCREENS
FROM $\frac{1}{2}$ Inch TO 200 Mesh ACCURATELY

SEND FOR CATALOGUE

STURTEVANT MILL CO.
105 Clayton St., BOSTON, MASS.



Fuller - Lehigh Pulverizer Mill

The Best Pulverizing Mill
Manufactured

Exhaustive tests in all departments, in competition with the most approved grinding machines in use, have demonstrated the superiority of our machine.

OUR CLAIMS:

Greater Output
Better Fineness
Fewer Repairs
Dustless

Few extracts from letters received from users

"With the four we are now ordering we will have in use 16 Fuller Mills in all, and I think you can hope to get orders from us within the very near future for quite as many more."

"We have to say for your Fuller Mill that it is unqualifiedly the best grinding device we have ever tried on our lime rock and eminently satisfactory to us."

"We are pulverizing with one Ball Mill and four Fuller Mills sufficient raw material to produce nearly 1200 barrels of clinkers per day, which record I believe can not be approached by any other mill on the market."

If interested, write us for further information

Lehigh Car, Wheel & Axle Works

Main Office—Catasauqua, Pa., U. S. A.

New York, 111 Broadway

Kansas City, Mo., Scarritt Building

THE KENT PULVERIZER

Takes one inch feed. Grinds to any fineness
from 10 to 200 mesh.

GRINDS PER HOUR WITH LESS THAN 25 H. P.

CEMENT CLINKER,	40 bbls. to 98%	20 Mesh.
CEMENT CLINKER,	12 " " 96%	100 "
LIMESTONE,	12 " " 83%	200 "
LIME,	2½ tons to 98%	200 "
ROSENDALE CEMENT,	43 bbls. " 90%	50 "
QUARTZ TRAP-ROCK,	4 tons " " 40 "	

You can easily figure from this what a Kent Mill would
save for you.

W. J. BELL, Esq. Supt.
NEWAYGO PORTLAND CEMENT CO.,
Newaygo, Mich.

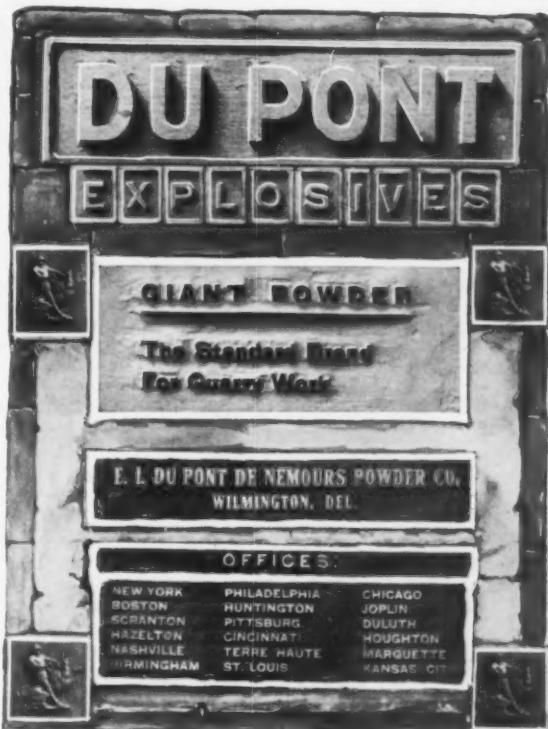
Says:—Four KENT MILLS are driven by one 75 H.P. motor

For Catalogs and Information, Address

KENT MILL CO.

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NEW YORK.



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**The Standard Explosive
Always Full Strength
Always the Same**

Send for new 66 page Blasting Manual

MADE BY

THE AETNA POWDER COMPANY
143 DEARBORN STREET, CHICAGO

Bank of Commerce Building
ST. LOUIS, MO.

CHATTANOOGA, TENN.
XENIA, OHIO

Woodward Building
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"TAYLOR MADE"

Trade TISCO Mark

MANGANESE STEEL

FOR

COMBINED HARDNESS, TOUGHNESS
AND HIGH TENSILE STRENGTH

— ITS APPLICATIONS —

Crusher Linings, Jaw Plates, Check Plates, Cones, Concaves.

Power Conveying Parts,—Gears, Sprockets, Sheaves, Detachable Link Belting.

Product Conveying Parts—Chutes, Etc.

The "Panama" Two-Part Dipper Tooth for Steam Shovels and Dredges.

"TAYLOR-MADE"

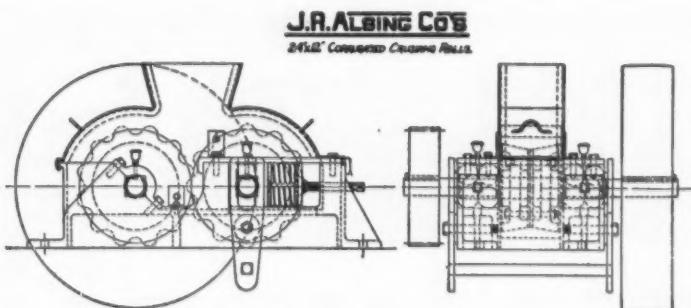
Castings for parts that receive the shock—which MUST be machined.

"THE REASONS IN THE STEEL."

It will pay you to review our complete Catalog and literature—Your request will have very prompt attention—**WRITE US TODAY.**

TAYLOR IRON and STEEL CO.

High Bridge, N. J.



Perfect Crushing Rolls

For Ores, Minerals, Chemicals, Etc.

Our crushing rolls are built in size and style to suit the requirements.

Built of the most suitable metal for the requirements. Novel Patented Device for always keeping the rolls parallel.

Write for further particulars to

J. R. Alsing Engineering Co.

136 Liberty Street

NEW YORK CITY, N. Y.

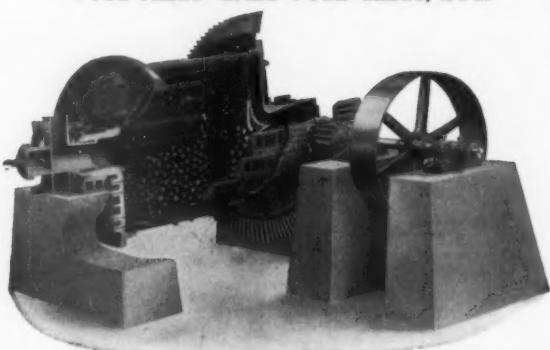
Western Representative:

Mr. C. Van Deventer, 1623 First National Bank Bldg., CHICAGO, ILL.

Cement Mill Machinery

FOR EITHER WET OR DRY METHOD OF MANUFACTURE

CRUSHERS—DRYERS—KILNS—COOLERS
TUBE MILLS—BALL TUBE MILLS, ETC.



Our Ball-Tube Mill shown above is a distinct innovation in the line of cement-making machinery, and is timed to entirely replace the old-time ball mill for the coarse grinding of cement clinker, because of its much greater grinding capacity per horse-power and the extremely low cost for repairs.

NO SCREENS TO CLOG OR WEAR OUT THEREFORE NO SHUT-DOWNS

Our entire line of Cement Mill Machinery is distinctive in character and design and is acknowledged by discerning engineers to be superior to any other on the market.

Our new Catalog No. 7 gives full and complete details. Send for it.

**POWER AND MINING
MACHINERY COMPANY**

CUDAHY (Suburb of Milwaukee) WISCONSIN
MEXICO CITY, CHICAGO, EL PASO, NEW YORK, SALT LAKE,
SAN FRANCISCO.

RAW MATERIAL GRINDERS

New Williams Universal



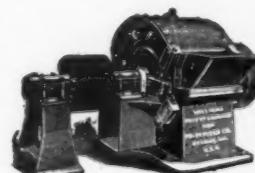
FOR TUBE MILL FEED
800 BARRELS 22 HOURS
95 PER CENT THROUGH 20 MESH
HORSE POWER 40 TO 50

WE ALSO GRIND
GYPSUM, LIME, COAL AND SHALE

Vulcanite Grinder

FOR ROLLER MILL FEED
TAKES MATERIAL FROM
GYRATORY, DIRECT

CAPACITY 20 TONS HOUR
FINENESS $\frac{1}{2}$ IN., $\frac{1}{4}$ IN. AND $\frac{1}{8}$ IN.
HORSE POWER 30 TO 35
1,200 MILLS NOW IN USE

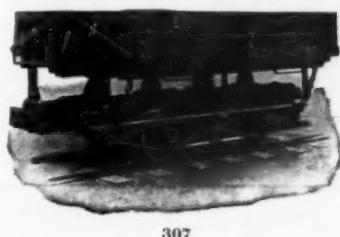


WRITE FOR BULLETIN NO. 12

WORKS:
ST. LOUIS, MO.

SALES OFFICE:
OLD COLONY BLDG.
CHICAGO

The Williams Pat. Crusher & Pulverizer Co.

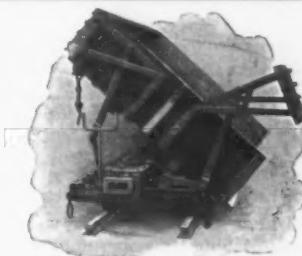


307

The figure 307 represents Continental Diamond Frame, Narrow Gauge Dump Car in upright position. Capacity, 4 or 5 yds. level full.

CONTINENTAL

Dump ~~CONTINENTAL~~ Cars



605

605 shows the dumped position of the above car. Note the sharp angle of dump and wide door opening.

CONTINENTAL CAR AND EQUIPMENT CO., Inc.

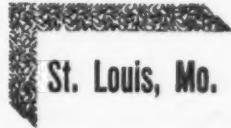
Works: Highland Park, Louisville, Ky.

New York Office: 17 Battery Place

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner
Brand Louisville Cement,
Portland Cements and
Building Materials.



ROCKLAND-ROCKPORT LIME

The sand capacity is immense. Produces a rich mortar with great spreading qualities. A saving of labor and material. Sold by all the best building material dealers.

ROCKLAND-ROCKPORT LIME CO.
FULLER BLDG., NEW YORK.

THE OHIO AND WESTERN LIME CO.

HUNTINGTON, INDIANA

MANUFACTURERS OF

LUMP LIME

ALSO, DIAMOND BRAND SUPERIOR WHITE FINISH

A HYDRATED LIME

AND A GROUND AND FERTILIZER LIME

Capacity 4,000 barrels or 10,000 bushels per day. Capacity of Hydrated Lime, 120 tons per day. Our LUMP LIME as well as our HYDRATED LIME is the very best obtainable for all purposes for which a good lime is needed in erecting buildings. Our HYDRATED LIME is absolutely the best finishing lime on the market.

The Hoosac Valley Lime & Marble Co.

ADAMS, MASS.

Manufacturers of

....High-Grade Finishing Lime....

Noted For Its Quick and Even Slacking.

Now in Use in Some of the Largest Buildings Being Erected in New York City.

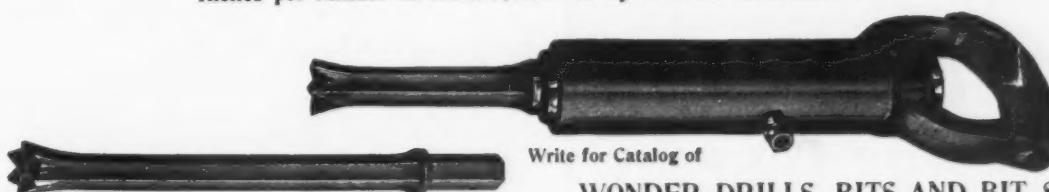
THOS. D. CONNORS, President.

Telephone
Connection

New York Office: 1123 Broadway.

THE DRILL THAT NO QUARRY SHOULD BE WITHOUT

Simplest of Construction, Light, Convenient, Easily Handled, Always Ready and Drills from 2 to 10
Inches per Minute in Hard Rock. Every Machine Guaranteed.



Write for Catalog of

WONDER DRILLS, BITS AND BIT SHARPENERS

Hardsocg Wonder Drill Co.

Ottumwa, Iowa, U. S. A.

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.
MANUFACTURERS OF THE

Celebrated "Cheshire" Finishing Lime.

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all.

HIGH GRADE FINISHING WORK

Selling Department, 39 Cortlandt St., N. Y., C. J. CURTIN, Pres't.

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.

Ash Grove Lime and Portland Cement Company

Manufacturers of

HIGH GRADE LIME AND PORTLAND CEMENT

R. A. Long Building.

Kansas City, - - - Missouri



PURE CALCIUM HYDRATE

Sand-Lime Brick

Difficulties can be Simplified and Overcome
by the use of Correctly Hydrated Lime.

We offer the EXACTLY RIGHT article

MARBLEHEAD LIME COMPANY

Chicago - - - Kansas City

Testimonials from Practical Experts Endorse Our Hydrate

The Strongest White Lime

ON THE MARKET

Uniform Quality

Finest Grain

The American Clay Machinery Co.
WILLOUGHBY, OHIO

May 16, 1906.

The Mitchell Lime Co.
Mitchell, Ind.

Dear Sirs:-
Replying further to your favor of the 8th inst requesting us to advise you the result of practical test of your lime in the manufacture of sand-lime brick. We are pleased to advise you that the lime hydrated easily and the brick made from it were first-class in every respect.
We have forwarded some samples of it to Mr. Elkus of the Indianapolis Composite Brick Co. and he can probably advise you further.

Very truly yours,
The American Clay Machinery Co.
by W. J. Burke.

MITCHELL LIME COMPANY

MITCHELL, INDIANA

NATIONAL MORTAR & SUPPLY CO.

PITTSBURG, PA.

We are now ready to supply the Trade with Hydrated Lime manufactured from the well known Lime Rock at Gibsonburg, Ohio. Trade mark **Banner Hydrate Lime**. We also manufacture Crushed and Ground Lime and have the largest and most modern hydrating plant in the United States.

Write for prices.

OFFICE: No. 209 NINTH ST., PITTSBURG, PA.
A. H. Lauman, Pres. and Mgr.

The Kelley Island Lime and Transport Co.

CLEVELAND, OHIO.

Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

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THE LARGEST LIME MANUFACTURERS IN THE WORLD.

The Ohio and Western Lime Company

WORKS AT

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Sugar Ridge, Ohio
Tiffin, Ohio
Huntington, Indiana
Geneva, Ohio
Limestone, Ohio
Lime City, Ohio
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MANUFACTURERS OF AND WHOLESALE DEALERS IN

Ohio White Finishing Lime, Ground Lime,
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Cement, Plaster, Hair, Etc., Etc.

Capacity
8000 Barrels
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Offices: TOLEDO O., 209-210-211 Chamber Commerce Bldg.

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DOES NOT DETERIORATE WITH AGE.



Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for years by the largest users of Hydrate in the country.

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MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

A. & C. Stone & Lime Co.

MANUFACTURERS OF

CRUSHED STONE AND WHITE LIME

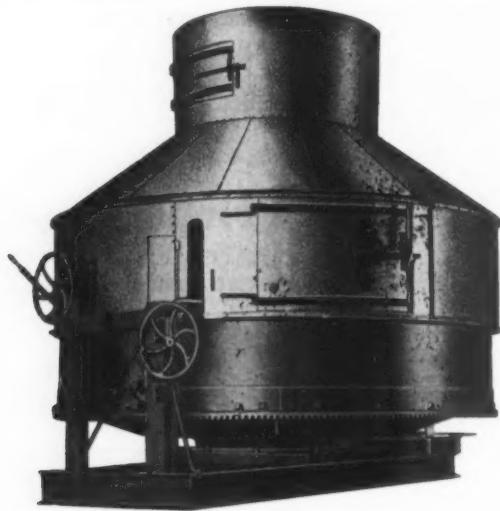
TOTAL CAPACITY CRUSHED STONE 4000 TONS DAILY.

Plants: GREENCASTLE, IND.
RIDGEVILLE, IND.
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LIME KILNS AT
PORTLAND, IND.

General Office: 17 N. Penn. Street
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The Clyde Hydrator

is the accepted standard of highest efficiency, economical operation, positive results and general all around serviceability in hydrating machinery

There are more of them in use than all others put together

They have proven their merit under all conditions

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“We like to answer questions”

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Manufacturers

DULUTH, MINN.

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HYDRATING POINTS WORTH NOTING

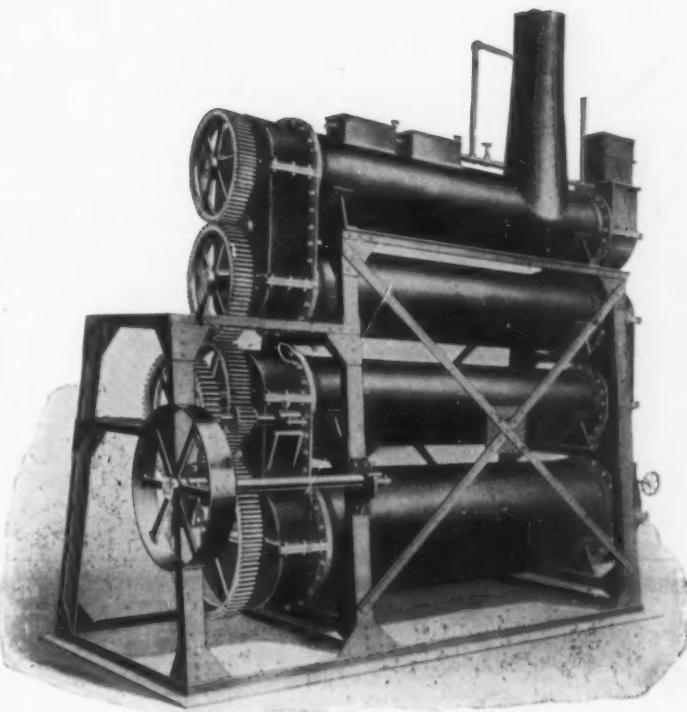
From the culminative evidence of the large number of successful plants in operation, there is only one logical deduction possible—That the **Kritzer Continuous Hydrator** offers advantages not possessed by any other system in use.

Our plants are designed to suit the conditions revealed by a chemical analysis of your lime—nothing is left to chance.

Our specialists advice is given without cost—it gives you the facts concerning the kind of lime you want to hydrate.

The **Kritzer Continuous Hydrator** is a superior machine for the hydrating of lime products, is simple in design with minimum number of parts, self contained in type, completely accessible in every part, large capacity, and the minimum of outlay for repairs making it easily managed under all conditions.

If you don't know what plant would be best for your particular lime, our specialists will gladly advise you free of expense. **WRITE THEM TODAY.**



KRITZER CONTINUOUS HYDRATOR.

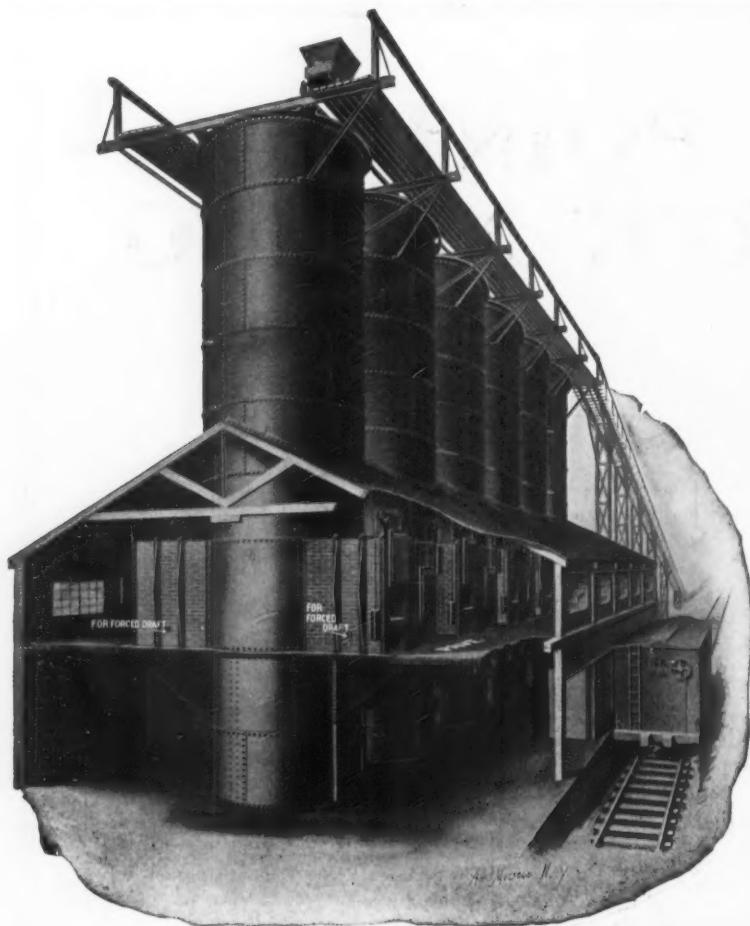
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WESTERN AVENUE AND SEVENTEENTH STREET

CHICAGO, ILL.

Keystone Lime Kiln

BROOMELL'S PATENT



This illustration shows a battery of six Keystone Lime Kilns set up complete ready for operation. No foundations being required and no stone work above the ground level, the kilns can be set very close together. Each kiln is arranged with four furnaces which are supported on heavy brackets. These same brackets support the timbers on which the firing platform is built, the timbers extending out to the edge of the building and supported on posts. The firing platforms are bricked from end to end, making ample room for firing and storage of coal. The ground floor on which the lime is discharged is entirely clear from posts or other obstructions. Note the substantial manner of supporting the platform on top of the kilns. Send for catalogue.

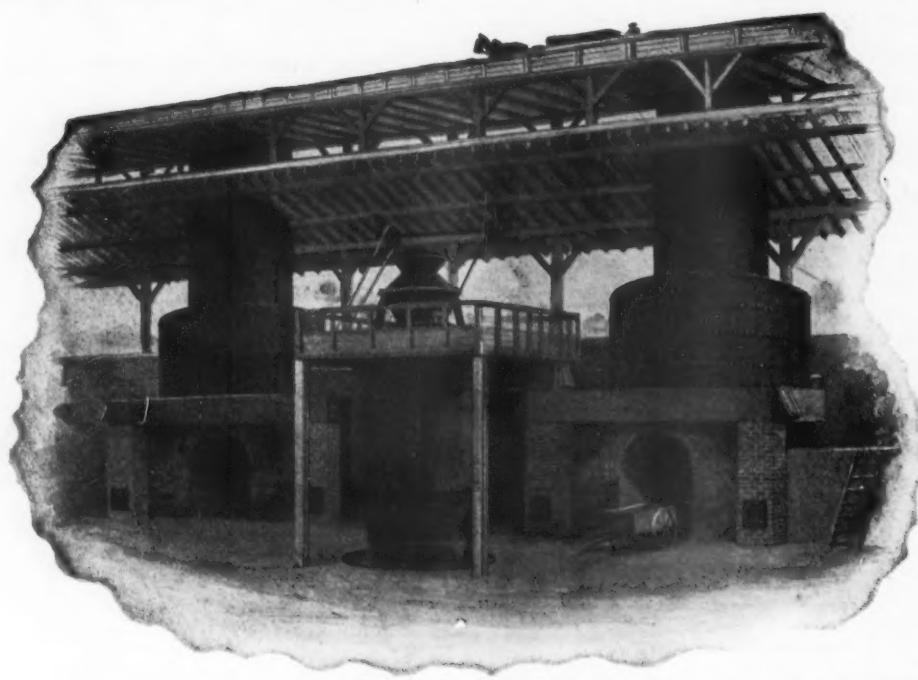
Broomell, Schmidt & Steacy Co.

YORK, PA.

Gas Producer Plant of the New England Lime Co., Canaan, Connecticut.

PRODUCER GAS
Makes the Best Lime
It increases the
Capacity of a Plant
and Reduces the
Fuel Bill

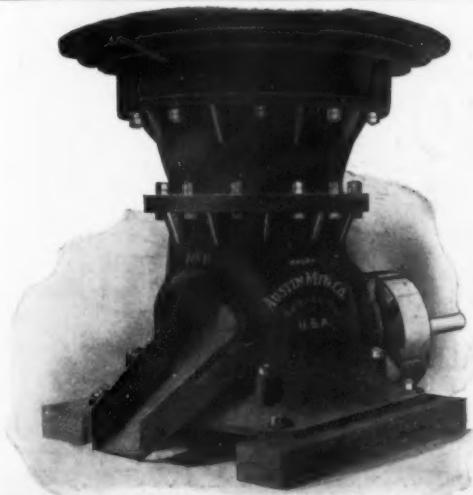
The Total Cost of
This Installation
Will be Paid for by
the Saving Effectuated
During the First
Year of Operation



"We have equipped two plants for above company and are now equipping a third."

MORGAN CONSTRUCTION CO., Gas Producer Dept., Worcester, Mass.

Tell 'em you saw it in ROCK PRODUCTS.



AUSTIN GYRATORY CRUSHER

The World's Leading Rock and Ore Breaker

The Only Automatically Lubricated Gyratory Crusher

8 Sizes—Capacities 40 to 2000 Tons.

Simple Construction (Saving Repairs)
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Result: EFFECTIVE, DURABLE AND MAXIMUM CAPACITY.

Plans and Specifications Submitted for Any Size Plant.

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New York Office, Park Row Building

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OF EVERY TYPE
CONSTRUCTED FOR ALL PURPOSES.
AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS
UNITED STATES DRYING ENGINEERING CO.
66-70 BEAVER ST., NEW YORK, U.S.A.

MACHINERY FOR Industrial Plants



We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock-crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

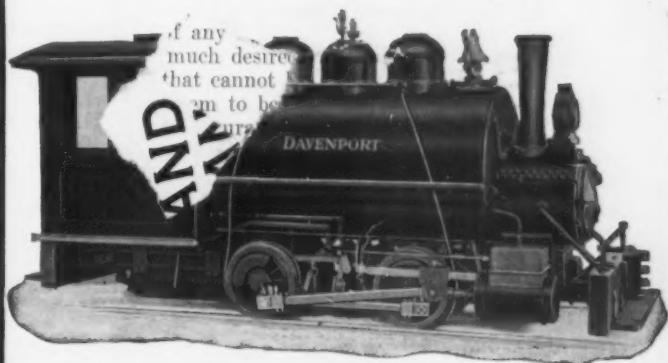
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H. W. Caldwell & Son Co.

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Do You Have Cars to Haul? The Davenport Locomotive Will Save Money



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If so, you cannot afford to get along without one of our

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Made in Two Sizes

No. 1 Derrick Lifts 1,500 Pounds.
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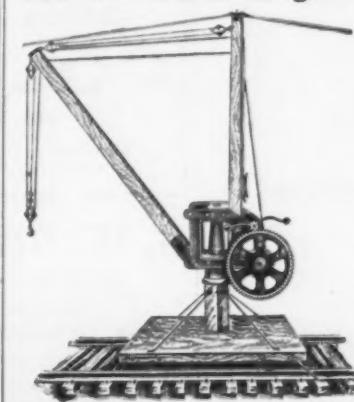
They are Light, Simple, Safe, Easily Set Up, and will do more work in 2 hours with 3 men than can be done in 10 hours with 6 men any other way.

Write for Our New Catalogue.

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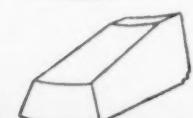
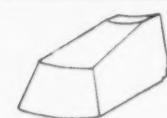


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ASHLAND, KY.

LIME KILN LININGS.

IRONTON CROWN.



GROUND CLAY
FOR
WALL PLASTER
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BOILER SETTINGS

DIRECT HEAT

DRYERS

—FOR—

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

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RUGGLES - COLES

DRYERS

RUGGLES-COLES ENGINEERING CO.

NEW YORK

CHICAGO

Cummer Dryers

See Other Ad.
Page 68

THE F. D. CUMMER & SON CO.,
Cleveland, Ohio.

BRICK and MORTAR COLORING

After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label." CORRESPONDENCE SOLICITED.

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Class Circulation
Real Buyers
Produce Results
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C. K. WILLIAMS & CO.
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The Largest Manufacturers in the U. S.

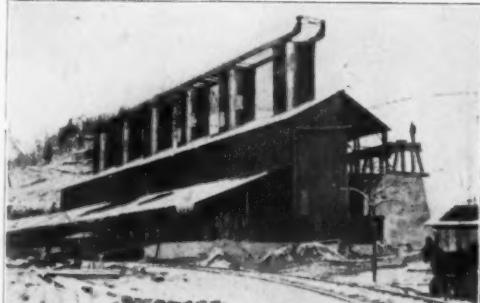
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OF ALL SHADES

CORRESPONDENCE SOLICITED. SAMPLES AND ESTIMATES
CHEERFULLY FURNISHED ON APPLICATION.

S. W. SHOOP & CO.

ALTOONA, PENNSYLVANIA

Designers and Builders of the
SHOOP IMPROVED PATENT LIME KILNS.
Designing and Installing a Specialty.
Tell 'em you saw it in ROCK PRODUCTS.



Lime Kilns and Plant of Blair Limestone Co.,
Canoe Creek, Pa.

Designed by

Henry S. Spackman Engineering
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42 N. 16th Street Philadelphia, Pa.

ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.

DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

Volume VII.

CHICAGO, MARCH 22, 1908.

Number 9.

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FRED K. IRVINE.

HENRY C. WHITAKER, Barre, Vt.

BENJ. F. LIPPOLD, New York City.

Communications on subjects of interest to any branch of the stone industry are solicited and will be paid for if available.

Every reader is invited to make the office of Rock Products his headquarters while in Chicago. Editorial and advertising copy should reach this office at least five days preceding publication date.

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In the United States and Possessions and Mexico.....	\$1.00
In the Dominion of Canada and all Countries in the Postal Union.....	1.50
Subscriptions are payable in advance, and in default of written orders to the contrary, are continued at our option.	

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BRANCH OFFICES:

NEW YORK CITY, Room 405 St. James Bldg. NEW ENGLAND, 16 Merchant St., Barre, Vt
PHILADELPHIA, Pa., 916 Rothschild Bldg.

Entered as second-class matter July 2, 1907, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879.

Granite paving blocks bring the highest prices in Chicago.

A contract that doesn't hold at both ends should always be avoided.

Expanded metal has won a permanent place among the standard building materials.

Whatever the business man may think of the prospects, there seems to be no end of confidence on the part of the labor element.

Concrete sewerpipe and conduits as well as structural tile of very high quality can be manufactured with big profit if it is done in the right way.

Little movement of materials comparatively is reported as yet, but there is a strong feeling of gradual improvement as the conservative contracts pile up.

Don't fail to peruse the advertising pages of ROCK PRODUCTS, if special opportunities in your own line of business are interesting or valuable to you just now.

We are glad to note the progress of the boomers who are making such a good showing, in the Western cities particularly. Cheer up. Improvement can be seen on every hand.

When your customer is inclined to buy heavily there is a savor of speculation in the deal. On the other hand, when he buys conservatively you can expect repeat orders promptly.

This is a good year for the city engineers to specify concrete sidewalks and paving. Cement is down close to cost basis, and early contracts may all be taken care of. There is no telling how soon this may change.

A good crop of road contracts has already been let, sufficient at least to guarantee a season of prosperity to the crusher operators. Road bonds are such an attractive investment that there is no difficulty in the direction of finances for this class of work.

St. Louis has taken the lead again both in the number and value of building appropriations. Concrete work has won the first place in the estimation of the builders there, and before the present season closes it will be the banner concrete city in spite of all the rebuilding operations in San Francisco.

Street work and roads close to cities and the larger towns should be heavily concreted for the best all-around results. It costs but little more in the first expenditure, and more than doubles the period of usefulness. Besides, the quality is better, with the advantages of appearance thrown in for good measure.

Equipment for the quarry and the road-building gangs is the one uppermost thought in the minds of road contractors at this time. The crushing plants are being overhauled and wagons repaired and new items added to the old outfit to make it as productive as possible. The season is on, and there is plenty to do.

It must be admitted, even by the fire underwriters, that concrete is the nearest approach of any known building material to the simonpure "fireproof" that is so much desired. Go to, is it not entirely practical to put up a building that cannot be burned, or even seriously damaged by fire? That would seem to be fireproof to all intents and purposes, except perhaps from the insurance standpoint.

Now that all the sanitary measures are completed and a tremendous list of equipment assembled on the Isthmus, we may expect to hear reports upon the progress of the actual work of cutting the great inter-oceanic canal. Our inland waterways improvements should be started and pushed so as to give the full benefit of that great natural investment at Panama to all parts of the country at the moment of its completion.

The waterways improvement measure so ardently advocated by the President, with the indorsement of all the people, must not be allowed to go by the board on account of neglect. The material and machinery interests can afford to take up the cause as their own and help to push it through. There never was such an opportunity from every standpoint to make a big appropriation for public work to benefit both the business public and the masses. It is needed now.

Hydrated lime, the only scientific way of handling that indispensable material, proves its own economy to the contractor who gives it a fair test. The saving in labor and cost of carrying mortar rolls up a big item of economy. The cost of the mortar hod-carrier or wheelbarrow man will eventually be entirely dispensed with, and uniform mortar will be quickly mixed on the pallet-board. In fact, there is no reason why it should not be done now, except for the habit of the old way of handling mortar. That old mortar-box is an expensive heirloom in these days of skyscrapers.

The standard specifications for the manufacture of concrete blocks, as adopted at the Buffalo convention of the National Cement Users' Association, are printed in full on another page in perfect form. The original draft of this important document has already appeared in print, but with the changes and amendments as developed in the discussion at the special meeting of the convention we give this first authentic publication to our readers. This document should be preserved, as the text book and guide for the operation of his plant, by every manufacturer of concrete building blocks who intends to make standard building material. All blocks should be made fully up to these standard specifications, and as much better from the standpoint of art and sightliness as practicable. The poorest blocks you make ought to come up to the standard, and all the quality you can put into them beyond that will add so much to your reputation as a blockmaker. The markets all call for the highest grade of materials, and the man with the best is constantly behind his orders.

ROCK PRODUCTS


**EDITORIAL
CHAT**

The first lime hydrating machine to be shipped out of the United States will leave on the Cunard steamship Cambria from Boston, Wednesday, March 25. It is consigned to the Fullwell Lime Works at Sunderland, England, by the Kritzer Company.

Edward Hett of Staten Island, N. Y., who received \$300,000 from the American Lithographic Company for his invention of a printing press that would print several colors at one time, has turned his attention to "manufacturing" homes for people to live in. Concrete is the material, with sheet molds made on the interchangeable unit plan as the means.

H. M. Scott, a Southern pilgrim from the Indianapolis office of the Lehigh Portland Cement Company, writes from way down in the heart of Mississippi, saying: "Conditions down here are limbering up quite a little, as nearly all the cotton has moved out and the lumber interests are getting busy. Quite a good many of them are getting the Lehigh habit."

The Turner Construction Company, 11 Broadway, New York, have just been awarded the contract for the reinforced concrete floors and interior columns for the warehouse to be constructed for W. S. Everson & Son, Jersey City, N. J. Work will be started immediately.

In the manufacture and sale of builders' supplies there is no more important problem than that of the package which carries goods to the consumer. All the cement, lime and plaster that is marketed is based upon the ideal unit of the barrel package, and yet only a small percentage of such materials in later years has been packed in barrels, owing to the first cost of cooperage and the impossibility of returning the empty barrel, necessitating a systematic passing of the cost of the barrel from the manufacturer to the dealer and on to the consumer. Undoubtedly the barrel package is the most desirable. It is at once not only the unit of measurement, but it is the size and weight which can be most conveniently handled, both in loading cars and ships and in teaming from the warehouse to the job. The first important improvement in a suitable barrel for the use of building materials has been invented within the past few months by Steve M. Wright of Memphis, Tenn., who is himself a well known and successful dealer in builders' supplies, and during his years of experience has handled very large quantities of lime, cement and plaster. On another page of the present issue is described in detail Mr. Wright's newly invented metallic slack barrel, which is collapsible and whose dimensions make it economical of space when nested for returning to the factory empty. Mr. Wright has received many congratulations from those who see a great future for such a barrel package, and it will, no doubt, be highly esteemed and widely used at no very distant date.

A. A. Pauly, Youngstown, O., inventor of the system and machinery for the manufacture of concrete structural tile, says he is very busy with the erection of an extensive plant for making concrete tile and that he has successfully completed a very large machine which makes the tile in larger quantities for the big plant, while the regular eight-tile machine, which is guaranteed to produce 400 tile per day, remains the popular one with those who are installing local plants in various parts of the country.

J. H. Crawford, manager of the Toledo Stone and Glass Sand Company, spent last week in Chicago getting a railroad siding put into a piece of property which he has leased for a term of years and incidentally called at our editorial sanctum. He says that the road-constructing branch of his business at Toledo is making a good showing, with enough work already on hand to run for fully half the season. The glass sand plant is being rearranged to some extent, and active quarry operations in both the limestone and sandstone quarries will begin in a few weeks. Mr. Crawford is one of the strong young men of the crushed-stone industry.

F. R. Bissell, formerly president of the St. Louis Portland Cement Company, is president of the Texas Portland Cement Company of Dallas, Tex., which has just taken over the plant and other property of the Iola Portland Cement Company of Texas. The transaction involved about \$3,000,000, and the plant purchased has a capacity of 4,000 barrels a day. The other officers are E. M. Reardon and Edward Hidden, vice-presidents; W. B. Cowen, secretary and treasurer. The directors are: F. R. Bissell, Edward Hidden, J. W. Perry of St. Louis; E. M. Reardon, J. C. Duke and Judge Etheridge of Dallas, Tex.; George E. Nicholson of Iola, Kans.

Lester G. French, M. E., a well known technical writer of national reputation, will in future have charge of the publications of the American Society of Mechanical Engineers at the headquarters of the society, 29 West Twenty-ninth Street, New York City.

Fred A. Havens & Co., the William Steele & Sons Company and Metzger & Wells, of Philadelphia, are estimating on plans for a coal yard at Bustleton for the Reading Railway. The work will include the erection of a 100-foot coal trestle of wood on concrete foundations and a frame office building measuring 10 by 12 feet, with a weighing platform 12 by 18 feet.

J. M. Campbell in an able address before the Mason Material Dealers' Association of New Jersey, reported in full elsewhere in this number, advocates making the National Builders' Supply Association a representative body, having as members all the members of State associations, or of State and local associations, and having such organizations represented in the national body by delegates in proportion to their membership. The address is full of good suggestions and well worth reading.

Following a conference of Philadelphia city officials on March 17, Mayor Rayburn announced that immediate steps would be taken to borrow \$9,000,000 to put under way municipal improvements which will give work to all of the city's unemployed. Why cannot this example be followed by other cities who are given to boasting of greater progressiveness than the City of Brotherly Love? If other leading cities should take similar action the hard times cry would soon cease.

The next monthly meeting of the American Society of Mechanical Engineers will be held in the auditorium of the Engineering Societies Building, New York, on the evening of April 14. The general subject of the meeting is "The Conservation of Our Natural Resources," which is now receiving unusual attention because of the invitation of the President of the United States to the Governors of the several States and to the presidents of the national engineering societies to confer with him in Washington on this important problem.

J. W. Voglesong of St. Louis, the well-known wood-fiber plaster expert, was in Chicago the other day. He says that his studies in the line of wood-fiber plaster board, partition blocks and fireproofing material have reached completion, and, after a thorough system of testing out, economical methods for the manufacture of a full line of these plaster products have been developed. He has become the manager of the wall plaster department of the Pittsburgh Plate Glass Works, and arrangements have recently been made for the installation of two plants to manufacture Mr. Voglesong's line of plaster commodities. One of these will be located at St. Louis, in connection with the Veniee mill, and the other at Ford City, Pa. The inventor would not say anything with regard to his products further than that all of these goods will be strictly stucco and wood fiber compacted under a pressure of 50 tons by a new and effective method.

John E. Gibson, Quitman, Ga., has contracted for the building of the new county road through Olesby Boulevard and will commence work about April 1.

J. L. Ballinger of the Ballinger Construction Company will at once start work on the plant of the Continental Portland Cement Company, which is to be erected on the Union Pacific Railroad about sixty miles south of St. Louis. This plant has been referred to before in these columns, and its initial capacity will be 3,000 barrels a day. It will cost approximately \$1,000,000.

Homer Sly has been appointed secretary, treasurer and assistant general manager of the Elk Portland Cement and Lime Company, Elk Rapids, Mich., succeeding Elliott M. Sly, resigned.

Edward West, North Manchester, Ind., has purchased the plastering business of T. J. Shelley at Warsaw and expects to remove to that point shortly.

The Master Plasterers' Association of Dayton, O., held a meeting recently at the office of the Employers' Association and took suitable action on the death of William Smith, who committed suicide.

The California Wood Fibre Plaster Company, Emeryville, Cal., of which F. M. Umphred is the president, has a large warehouse, with a switch track on Halleck Street near Park Avenue. They report a large sale for their wood-fibre plasters, fireproof and indestructible.

Are Siberian Roads Better than Ours?

Paul Pons, the Frenchman who was the first to abandon the New York to Paris automobile race, arrived in Paris on the night of March 7. When interviewed by an American newspaper correspondent he had something to say about American roads, and it wasn't complimentary. "The American roads," he said, "are inconceivably bad. Even in the Eastern States they are full of quagmires, gullies and hillocks." By way of emphasis he added: "I don't believe any of my comrades will finish the course, although, once beyond the United States, they may find better roads in Alaska and Siberia."

This seems rather rough on American roads. But isn't M. Pons right? As a chain is no stronger than its weakest link, so a system of roads must be judged by its roughest sections, and there is no doubt that in the United States, even in the best sections of the best States, the poor roads outnumber the good ones.

New Acid-Proof and Damp-Proof Bag.

One of the specifications in the Isthmian Canal Commission's call for bids to supply cement for the big ditch is that if bags are used these must be especially designed damp-proof bags, approved by the Chief Engineer. With similar demands for damp-proof as well as acid-proof bags in mind, the manufacturers have for years experimented along the lines of a chemical compound which would make ordinary cotton-duck and jute bagging proof against dampness or corrosion.

Happening into the office of J. C. Skiff, the Chicago manager of the Bemis Bros. Company, 1019 Royal Insurance Building, recently, a ROCK PRODUCTS man was shown samples of both cotton-duck and jute treated with a new compound which Mr. Skiff says was the accidental discovery of the company's chemist. Containers made out of this especially prepared material have, according to Mr. Skiff, been thoroughly tested, and they expect to put on the market in August or September a special make of bags, under the brand "Nodekay," which will embody the new discovery. It is claimed for the new process that it makes bags absolutely waterproof and therefore acts as a perfect waterproofing material; also that it is acid-proof as well as waterproof; that it will not deteriorate with age and that it will not crack or change its condition, nor will it be in the least affected by severe climatic heat as found in the tropics or become sticky from heat or moisture as do other compounds used in waterproofing cloths. The process furthermore adds closeness and strength to the material, so much so that the Bemis Company expect to be able to use a lighter weight of stock for the sacks treated by their process. The proofing adds about one cent to the cost of a bag, while adding from 25 to 30 per cent to its strength and durability. By reducing slightly the weight of the material used, Mr. Skiff thinks that the new bags can be made at about the price of ordinary bags.

The Bemis Company have such faith in their discovery that they have had plans made for a special plant for the manufacture of the new bags. This plant will be erected at once either at St. Louis or at Bemis, Tenn., where the company's big cotton mill is situated. Bemis is a little town which has grown up six miles from Jackson, Tenn., and the population of which is mostly made up of the employees of the company's mill. As stated, the bags cannot be put on the market until August or September, but Mr. Skiff says they will be ready in time for the big Panama cement contract.

For lime, plaster, fertilizer, etc., the new bags will be found indispensable. An acid-proof bag at a low cost has long been a desideratum. A big stock-yard concern will use the new bag for their fertilizer product, the "Nodekay" samples submitted to them having stood the severest tests. This will prove a great boon to the fertilizer trade, as heretofore bags could not be used for storing the product and the mills could be run only at certain seasons. With the non-corrosive bags, the fertilizer mills can be run all the year around.

The Sales Agent

TO DEVELOP SALESMANSHIP.

The object of this department is to provide for the Sales Agents, general, traveling and local, a place where they can meet each month, talk over the best ways to improve the business in which they are interested, and where important happenings may be chronicled so that the business-getters in the East, West, South and North may coöperate for the general upbuilding of the building-material business.

The editors of ROCK PRODUCTS invite every live salesman to join hands to attain the objects sought. This is your own department. Fill it up with your own sayings, but do not forget the object.

One of the liveliest sales agents in the East submits the following reflections to this department for the attention of the brethren: "If there is any one subject needs the attention of sales agents, it is the matter of having a definite contract. After they have made a contract, spent the company's money in securing that contract, given to the railroad company good hard cash to get the salesman into the town to close up the business, then it is all wrong for that dealer to come along afterwards and say he has made up his mind he doesn't want the goods or that the market is lower than he thought it was going to be, or that somebody else did not do something, or because somebody else did not do something else. My policy for years has been to do away absolutely with every possible contract, but when a contract is made that it shall be absolutely binding at both ends, regardless of whatever differences may arise in the future. In other words, to live up to what two minds have mutually consented to is a proper and just proposition."

W. H. Ford of the William G. Hartranft Cement Company is now making his home at Montreal, Can., and that means that he is circulating extensively throughout King Edward's American dominions and making friends among the cement trade, which is a habit with him. He is slipping in with the orders for cement just as he did in the days when his personality was connected with the distribution of cement in the sunny South. Now Mr. Ford is a native of Charleston, S. C., and he is typically a Southern gentleman, which is to say that the droll side of life particularly appeals to him. This is the first whole winter that he has spent so near to the North Pole. A characteristic letter arrived from him recently which says: "I am on a slow train in New Brunswick headed for Halifax. At the border line of the province they threw me out last Saturday night because they do not allow trains to run on Sunday. The French have this country, and in so far as diversity of speech is concerned we have the builders of Babel skinned to death. As for cold weather, in Canada they do not put any figures on their thermometers above zero, and everything is covered with snow and ice. I should think such conditions would increase crime, as it takes away all idea of retribution hereafter; for in this season it is pretty hard to figure out how any place could be uncomfortably warm. If I knew of any such place I would say, 'Lead, kindly light.' In Montreal they have horse races on the river, and they have laid tracks and have run street cars over the St. Lawrence. When you talk out of doors, the words freeze and fall in chunks to the ground, and you have to pick them up in a blanket and thaw them out before a fire in order to know what the conversation was about. I am making a complete tour of Canada from coast to coast, and when through, about May 1, will come back and settle down in Montreal for better or for worse. If any of the boys from your city are thinking about Canada as a home refer them to me. I had Moses and the Prophets, but let the next fellow have Moses, the Prophets and me, too."

The Universal Entertains at Buffington.

The Pennsylvania Coal and Supply Company of Milwaukee, Wis., and the Universal Portland Cement Company entertained the city officials, architects and contractors of Milwaukee March 10 by a trip to the Buffington plant. A special train on the C. & N. W., composed of three Pullmans and a baggage car, left Milwaukee at 7 o'clock in the morning, arriving at Chicago at ten o'clock, where the officials of the Universal and the newspaper boys were taken aboard, and the trip continued to Buffington over the Pennsylvania road. The party was nearly one hundred and fifty strong, and every minute of the trip was enjoyed. A delightful plate luncheon was served on the train going down to the plant, and plenty of the wherewithal to wash the same down was provided. A goodly portion of this was brought from the far-famed city of Milwaukee.

Arriving at the plant at Buffington, everybody lined up in front of the camera, and the picture printed herewith is the result. The party was then divided up into small squads, and each placed in charge of a guide who could explain the various points of interest throughout the trip, which consumed about an hour and a half. Every part of the big plant was visited. The guests were taken through the raw end, where the material is ground, into where the immense kilns with their giant fire eyes revolve ceaselessly burning the raw material into clinker, which is afterwards reground, pulverized and, last of all, bagged ready for shipment to be used in engineering and construction work in all parts of the country. Expressions of amazement and wonder were heard on all sides from those who for the first time were privileged to see a big cement plant in operation. No longer is the process of manufacturing cement a secret, and the various intricacies of manufacture were explained in detail by the competent guides. Many were the questions asked, but each question met a courteous reply.

It is safe to say there has hardly ever been a larger body of distinguished men, really interested in concrete construction, gathered together at a cement plant, as it is only a matter of recent years when the big cement plants of the country absolutely refused to permit any one to view their plants during their operation.

On the return trip an elaborate course dinner was served. Those who were in the party were:

Officials—Major W. V. Judson, U. S. Army; Lieut. Douglass McArthur, U. S. Army; Major R. W. Corbett, treasurer National Soldiers' Home; Mr. Thompson, Assistant Government Engineer; Chas. J. Monroe, Alderman; Wm. F. Kane, Alderman; Chas. Buckmueller, cement tester; V. J. Schoenecker, Commissioner Board of Public Works; J. P. Sherer, Commissioner Board of Public Works; L. A. Jansen, Commissioner Board of Public Works; Wm. H. De-

vos, Customs Collector; E. Koch, Building Inspector; Mayor F. E. Walsch, West Allis, Wis.

Architects—Geo. B. Ferry, A. C. Clas, H. C. Koch, Chas. Kirchoff, T. L. Rose, D. B. Danielson, O. C. Uehling, H. J. Van Ryn, H. W. Buemming, G. A. Dick, Chas. L. Lesser, C. Leenhouts, H. W. Guthrie, A. C. Eschweiler, O. Liebert, M. Ringer, Armand Koch.

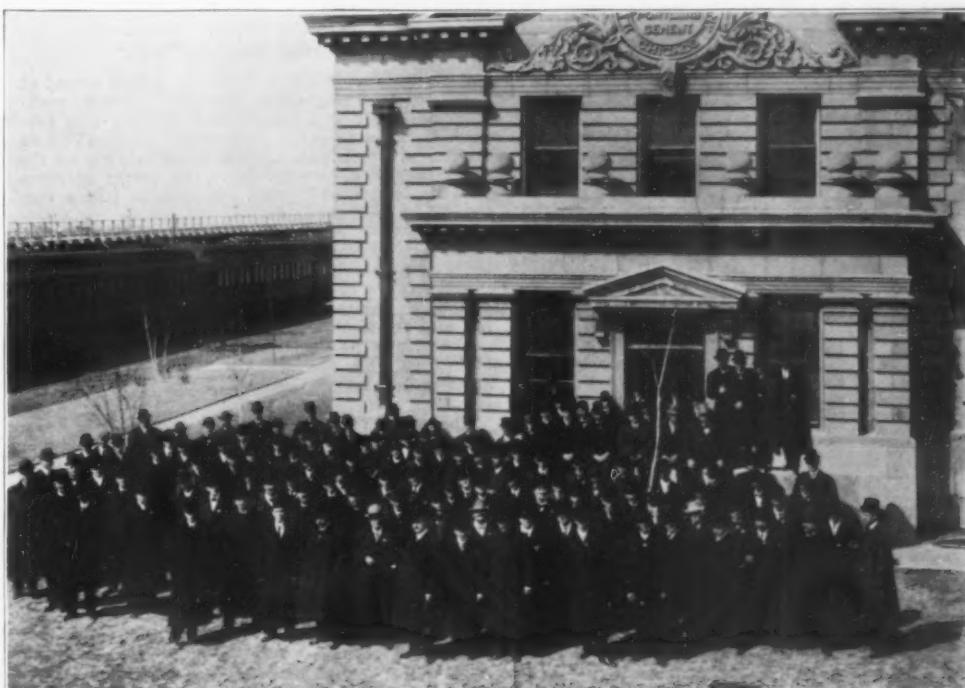
Contractors—John P. Dean, F. Schomann, D. W. Cutler (Northwestern Tile Co.), John A. Dallmann (Northwestern Tile Co.), R. B. Hartman (Fire & Rust Proof Construction Co.), A. Geo. Harper, B. F. Sanders, Geo. Markey, Henry Hase, James T. Bannen, Edward Dreyer, Geo. Crosse, Chas. Tolzman, H. Danishefsky, James Donohue, James A. Silver, G. E. Kahn, H. Ferge (Northern Construction Co.), Riesen & Co., Geo. Zimmerman, H. Hohensee, H. S. Pelton (General Construction Co.), John Bonnet, J. P. Michie, Sam Brockman, Conrad Rauf (Raulf & Lewis Construction Co.), John S. O'Neil, James O'Connor, Henry C. Fuldner, W. A. Lewis (Raulf & Lewis Construction Co.), W. A. Johnson, A. Hood & Tullgren, O. Holgersen, Wauwatosa, Wis., W. Winter, B. F. Stuewe, E. Winter, E. Steigerwald, W. Strachota, Schuette & Frey, C. Schoknecht, Schoknecht Bros., E. Kiesslich, L. Auer & Sons Co., J. L. Wessolowski (Milwaukee Cement Block Co.), Mr. Bossert, R. P. Hansen, Mr. Pfister, U. F. Durner, P. E. Posson, C. C. Sprague, Erdman Schultz, West Side Construction Co., Mr. Sterling, contractor and engineer, W. West, Geo. Meyer, Theo. Neubauer, Danielson & Son, Otto Gelhaar, Wm. Dehnert, W. Benzemann, Henry Schmidt, Riesen Wilke, Geo. Meredith, C. Huebbe, Richard Huebner, Chas. Gruenwald, Grather Rischman, F. Doerlein, O. Knie, Minnehan & Jacobie, P. E. Posson, B. Sevier (Northwestern Tile Co.), John Werher.

Engineers—Chas. J. Poetsch, city engineer; B. W. Perrigo, assistant city engineer; Geo. Randall, city engineer, Oshkosh, Wis.; Rufus Brown, Oshkosh, Wis.; S. A. Codington, engineer; F. Schneider, A. W. Parsons, engineer (Milwaukee Coke & Gas Co.).

Pennsylvania Coal and Supply Company—J. B. Whitnall, E. F. Whitnall, Geo. Eastman, O. F. Bird, W. E. Caldwell, R. J. Steele, A. P. Compton, Wilmer Sieg.

Universal Portland Cement Company—Edward M. Hagar, president; J. G. Bergquist, works manager; B. F. Affleck, general sales agent; B. H. Rader, Eastern sales agent, Pittsburgh, Pa.; C. W. Boynton, chief inspector.

Miscellaneous—Jac. Donges, W. E. Gillen, E. Usinger, C. Blommer, O. Jaeger, E. B. Meissner (chief clerk, M. E. R. & L. Co.), Wm. Conklin (Conklin & Sons, Madison, Wis.), Frank Beswick (Conklin & Sons, Madison, Wis.), John Weiler, F. Hildebrandt, H. C. Lemke, Mr. Gerhardt, J. P. Guigan, purchasing agent, Milwaukee Coke and Gas Company; Art Muth, purchasing agent Pabst Brewing Company; A. Uihlein, Schlitz Brewing Company; Geo. Lund, Linderman & Son (Linderman & Holverson); W. G. Bruce, secretary Merchants and Manufacturers' Association; R. A. Corbett; H. Hartgerink, Waupun, Wis.



MILWAUKEE VISITORS AT THE "UNIVERSAL" PLANT.

ROCK PRODUCTS

QUARRIES

A MODEL STONE PLANT.

The Elevator and Conveyor System of the Cedarcliff Stone Company.

CEDARCLIFF, N. Y., March 12.—One of the largest and best equipped stone-crushing and shipping plants in America has recently been completed by the Cedarcliff Stone Company at its works near this place. An interesting and important feature of the plant is the complete system of elevators and conveyors by which the stone is handled throughout the numerous processes of preparation and shipment. This system may be divided into two parts: First, the series of elevators and conveyors which takes the stone from the crushers to the revolving screens and from thence to the storage grounds, and, second, the series which delivers the sized product from the storage grounds to cars or vessels as the case may be. The first system consists of three elevators and two belt conveyors. Each of these elevators is 65 feet high from center to center of wheels. They are all of the general types illustrated and are the same in construction and dimensions of parts. Two of these elevators stand side by side and are so located that they handle the product of a No. 9 Gates crusher and four No. 6's. The stone from each elevator is delivered into a revolving screen from which the tailings go back to two 6's on each side and are re-crushed. Everything which passes through the screens is received by the third elevator, which stands directly in the rear of the other two, and which delivers it to the finishing screen in the top of the building.

The finishing screen separates the stone into $\frac{2}{3}$ " and $\frac{3}{4}$ " products and the screenings which pass a $\frac{1}{2}$ " hole. The screenings are carried by a 14" Century belt conveyor to the north of the building, a distance of 100 feet. The $\frac{2}{3}$ " and $\frac{3}{4}$ " products are conveyed to the storage grounds at the south of the building by two separate belt conveyors, the belt for the concrete stone being 24" and the other 18" in width. These conveyors to the storage ground discharge the stone by means of an automatic tripper into the proper compartments for each class.

The plan of ground storage adopted by the Cedarcliff Stone Company is something unique in stone-crushing plants and is, so far as we know, the first in which this arrangement has been adopted. Most stone-crushing plants, as is well known, deposit the stone in large bins, which are not only costly to erect, but must be maintained at heavy expense. This ground storage plan is precisely the scheme commonly used for storing coal. The storage ground is 160 feet long by 100 feet wide, and the distributing conveyors are placed at an elevation of 35 feet, so that the storage capacity is about 8,000 cubic yards.

The distributing conveyors over these grounds rest on concrete columns placed 35 feet from center to center, each column being 12 feet by 7 feet in plan, and having a ventilating shaft 8 feet by 3 feet in its center from top to bottom. Underneath the column in the center, and running the entire length of the storage ground, there is a conduit or tunnel cut out of the solid rock. The cross section of this tunnel is 8 feet by 8 feet inside measurements, and its



"CENTURY" BELT CONVEYORS FROM RINS TO CARS AND VESSELS AT CEDARCLIFF.

length is 160 feet. The walls and floors are of concrete, while the roof of the tunnel is formed of 12-inch I-beams set 2 feet apart and filled in with concrete. In this roof, bin-gates are located 6 or 8 feet apart the entire length. Over the tunnel, stone will be piled to a height of 35 feet.

For conveying this crushed stone to railway cars or barges, a 36-inch belt conveyor travels the entire length of the tunnel. By opening one of the bin-gates described, the stone from above falls onto the belt conveyor, which delivers it to an elevator 45-foot centers. This discharges onto another belt conveyor 36 inches wide by 200 feet long, which carries it over the railway tracks to the wharf at the river's edge. The stone from this conveyor is discharged by a tripper either at the wharf for loading vessels or into a small pocket overhanging the sidetracks of the West Shore Railroad Company, where it is loaded onto railway cars.

This system of loading conveyors is designed for a capacity of about 400 tons per hour and is operated by an independent engine so that the barges or cars can be loaded without reference to the operation of the main plant.

A conspicuous feature of this elevating and conveying scheme is the great strength of the elevators. The buckets of all are 30 inches in length and are sustained by two parallel chains especially designed and made up for the heaviest possible work. The chains are the "Michigan" type of the Jeffrey Climax steel chain, except that they are made in double width in order to give greater bearing surface on the head and foot wheels. They are designed to carry a steady load of from six to seven tons, and as a factor of safety in strength of about 15 is allowed, it is reasonable to suppose that there will never be any serious trouble, even though the conditions under which they work are necessarily severe.

The entire elevating and conveying system was installed by the Jeffrey Manufacturing Company of Columbus, O. It works with great smoothness and efficiency, and the management of the Cedarcliff Stone Company express themselves as highly pleased with the installation.

Joliet Strike Settled.

JOLIET, ILL., March 9.—The quarrymen's strike, which has been smoldering all winter, was settled today by the Industrial Committee of the Commercial Club, and 500 men will return to work at once. The monthly payrolls of the Joliet quarries amount to about \$20,000. The ten weeks the strike lasted were marked by considerable disorder. The men are taken back irrespective of union membership, but there is no increase in wages.

New Stone-Crushing Plant.

NEW YORK, March 18.—The Storm King Stone Company have closed a contract with the Mashek Engineering Company for a 1,000-cubic-yard-per-day stone-crushing plant, to be built at Storm King Mountain, on the Hudson River.

Improving Quarry Plant.

GALLAND, Ia., March 9.—The big quarry owned at Ballinger by Tucker & McManus of Keokuk, probably the largest in Iowa, is about to have some substantial improvements. Another massive stone crusher will be added, increasing the capacity of the quarry about six cars per day. The quarry has been worked about fifteen years, but there is still a vast amount of rock available.

The city of Portland, Ore., is debating the advisability of purchasing a rock-crusher.

The Allouez Township Board, Mohawk, Mich., have decided to purchase a rock crusher for use in crushing rock for highway purposes.

There is a movement on foot in Portland, Ore., backed by City Engineer Taylor, to purchase rock crushers and install them in various sections of the city.

The Wallace Stone and Lime Company and the Peter Malcolm Estate, Saginaw, Mich., have secured the contract to furnish the crushed stone and gravel for the county road work this year.

Because local quarrymen have raised the price of crushed stone from \$1.20 to \$1.50 per cubic yard, Mayor Koenig of Rochester, N. Y., has instructed Engineer Wooley to put in a crusher at the city quarry.

J. H. Crawford, secretary and general manager of the Toledo Stone and Glass Sand Company, Toledo, O., writes ROCK PRODUCTS: "I had the pleasure of landing the contract for three and one-half miles of stone road in German Township, Fulton County, Saturday, and sold the stone by the ton of 2,000 pounds, which is one step in the right direction."

A Good Thing for Any State.

The State of Connecticut is spending \$4,500,000 on good roads. There will be fourteen main trunk line highways traversing the State. Four of these highways will run east and west from the New York to the Rhode Island line, while ten will run north from the shore of Long Island Sound to the Massachusetts boundary. And, doubtless, each of these trunk lines will connect with turnpikes in New York, Rhode Island or Massachusetts, as the case may be.

Commenting on this, the Arkansas Gazette says: "Four and a half million dollars is a good sum of money to be raised, as the plaintive politician would say, 'by taxation of the plain people of the State,' but think of the benefits and the advantages of having a State gridironed with splendid highways!"

"Suppose Arkansas had stone highways running north and south or east and west from Louisiana to Missouri and from Oklahoma to the Mississippi River. Wouldn't good roads, drainage and such improvements mean much more for Arkansas than do anti-trust bills that won't serve any purpose except for political thunder; mean much more for Arkansas than does oratory about Johnson grass on the convict farm and other such matters?"

The Minnesota Flint Rock Company, New Ulm, Minn., have purchased machinery for a new rock-crushing plant and expect to be in operation by May 1.

Bids will be opened on March 26 by State Highway Commissioner Joseph W. Hunter at Indiana, Pa., for two State roads to be built in that vicinity this summer. The total length of the roads is nearly 11,000 feet.

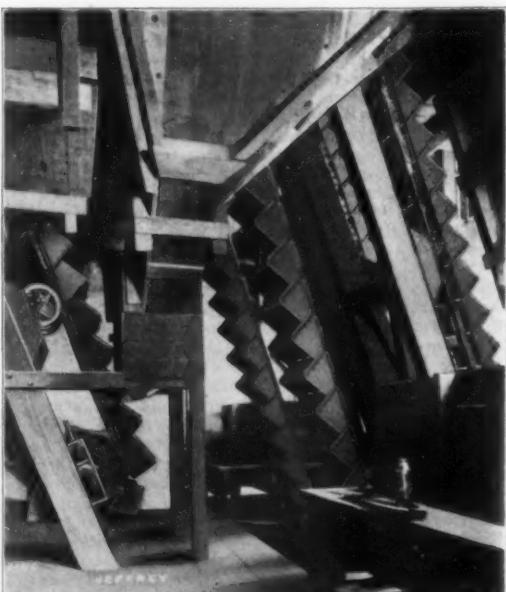
Menominee County, Mich., will spend \$19,000 this year in repairing, improving and constructing new roads. Work will be let by contract. At the session of the County Board on February 21 they decided not to purchase a stone crusher.

The Common Council of Plainfield, N. J., will advertise at once for bids for crushed stone and culvert and crosswalk stone for delivery during the year. The stone is to come from the Hudson River quarries, and bids from other quarries are excluded.

J. J. O'Laughlin of Waukesha, Wis., has secured for the Waukesha Lime and Stone Company an option on the stone quarry on East Avenue at the rear of the Carroll College grounds. The company expect to erect a crusher on the property to take care of their Northwestern stone trade.

The plan of the Lackawanna County Commissioners of Towanda, N. Y., for constructing a paved highway from the Luzerne County line in Duryea to the Susquehanna County line in Forest City, twenty-six miles, has been approved. The estimated cost of the improvement is \$600,000, and work is to be started this spring.

The Levy Court at Wilmington, Del., will soon ask for bids for the construction of several more roads. All of the sum of \$91,000 realized from the sale of bonds will be spent for this purpose. Among the first to be built or improved will be the Newport turnpike, the New Castle road between Eden Park and the limits of New Castle, the Lancaster turnpike and the road from Talleyville to Helly Oak.



ELEVATORS TO CRUSHERS AND SCREENS.

Graft in Management of Municipal Crushers.

BOSTON, MASS., March 3.—In its report to Mayor Hibbard, the Finance Commission of the city of Boston makes the startling charge that during the past twelve years the city has lost \$1,000,000 through its stone crushing business. The commission states that the political control of these crushers has resulted in waste and extravagance and that the city would save at least \$100,000 a year by securing its crushed stone by contract. Mayor Hibbard some time ago made an investigation himself of the municipal stone crushers and anticipated the report of the Finance Commission by closing them down last week. The period covered by the Finance Commission's report extends over twelve years, showing an average loss to the city of \$83,333 per year. Among other statements made by the commission is one that the cost per ton of crushed stone at the Heath Street crusher was \$41.20, while the market value of such stone was \$1.10 a ton. Reckoning depreciation and interest on the Heath Street plant, the stone cost \$87.74 per ton, or just about eighty times its market value. The commission, in accordance with the Mayor's view, recommends the sale of the crushers owned by the city. It also recommends a five-year contract to the lowest bidder for future supplies of crushed rock. The original cost of the eight plants, excluding the land, was approximately \$120,000. Their present value to a contractor having use for the machinery is estimated at \$67,000, a shrinkage in value of over \$50,000, and the dismantlement value, or the amount the plant would bring if sold for removal, is about \$30,000, a shrinkage on the original cost of \$90,000.

REINFORCED CONCRETE IN THE CONSTRUCTION OF HIGHWAY BRIDGES AND CULVERTS.

By JAMES AUSTIN MORTLAND, C. E., Grinnell, Ia.
(Paper read before the Nebraska Cement Users' Association.)

The one great problem of our roads and highways in the Middle West is how they can be made serviceable for the twelve months in the year and be kept up at a minimum expense after time and money have been expended on them.

It is clearly out of the question for the roads to be built out of gravel or stone in many places in this section of the United States, on account of the remoteness and the excessive cost of the necessary materials.

The problem of making good dirt roads is yet to be worked out, but it is possible to secure much better highways if the road supervisors or Board of County Commissioners would establish grades and carry out a drainage system along the public roads, and by a systematic filling of the low places and cutting down the hills we would secure roads infinitely better than those we travel over at present.

The building of roads and bridges was necessary, in the earlier days, to make the growth of any section of the country assured; but in all the Middle West the country has developed and the land increased in value almost phenomenally, and yet such a small amount of money has been expended on the roads and bridges.

Along with any road improvement we have the question of bridges across the streams and dugouts.

These bridges must be built across two classes of streams, living streams, that flow the year round, and intermittent streams that flow only during the spring months, or after heavy rains.

There are several kinds of material for the construction of such bridges. We have to do with:

1. The wooden bridge, with pile bents.
2. Steel frame, or superstructure, on piling.
3. Steel superstructure on masonry abutments, with wood floor.
4. Steel superstructure on abutments, with a concrete floor.
5. Large sewer pipe or tile.
6. Culverts or smooth or corrugated steel pipe, galvanized or painted.
7. Bridges and culverts of reinforced concrete, of any span or shape.

We have now before us seven types of bridges or culverts, all of which have been used on our highways with varying degrees of success.

The suitability of each can best be determined by studying the many conditions which such a structure must undergo.

A bridge or culvert on any highway must necessarily be such as to require little attention or care. It is safe to say that we hardly have a bridge on any of our highways that is regularly inspected from time to time.

Not until a plank in the floor is broken, or a washout carries away the filling from the approaches of the bridge, or by some condition it is made a dangerous crossing, is it inspected or looked after.

In other words, it is necessary to build bridges or culverts that require little care and maintenance.

Now let us consider the use of the wooden bridge in highway improvement. At many places wooden bridges are built over very small streams where the actual span across the stream is very much less, on account of the fact that it is impossible to hold the road leading up to the bridge and to keep the stream under the bridge. I will cite two cases: One where a concrete arch bridge, 35-foot span, was built to replace a wooden bridge 80 feet long; the other, where a 40-foot span concrete bridge replaced a wooden structure 66 feet long.

To hold a wooden bridge in place the piling must be in solid ground; hence we always have so much bridge spanning dry ground, and with the plank roadway there is always the wearing out of the planks, and with that the possibility of having a dangerous crossing.

Speaking of the excessive length of wooden bridges, there is one county in Iowa that has ten miles of wooden bridge floors to maintain, and this county is below the average in the number of bridges.

To make culverts of wood, where any amount of earth is to be placed on top, is temporizing and in the end will cost more to replace.

Bridges with a steel superstructure on piling, with wooden floors, are not much better than the wooden bridges and are of no more use in making our highways permanent than an all-wood structure.

Steel bridges with concrete or masonry abutments and with wood floors are not at all so desirable, as the floors rapidly wear out, the life of a plank floor on a bridge with ordinary travel is not more than five years, with many new planks needed from time to time in that interval.

Steel bridges on concrete abutments, with concrete floors, are wholly desirable, but are likewise expensive; in fact, it is possible to construct a concrete bridge as cheaply in ninety-nine cases in a hundred, and the concrete bridge has the advantage of not requiring the painting and suffers no depreciation from the elements.

So far we have considered bridges for living streams or for locations where it would not be policy to narrow the waterway to any great extent. But in this section of the country, in all the Middle West, we might say, about one bridge in five spans a living stream, the other four-fifths spanning gullies and dugouts that are dry for greater part of the year.

Thus we have a condition presenting itself to the highways as it has to the railroads, and we find the railroads have almost invariably constructed such a waterway by means of culverts under their tracks, so as to carry a normal rainfall and filling on top, giving them a continuous roadbed; with a flood, the water may be held back for a time, but soon can get away without any great damage from backing up.

It is possible to adopt this method of placing culverts in such places on the highways, and by filling on top a roadway is obtained that is permanent and with no danger of ever giving out.

By reducing the length of the bridge and placing a culvert the resultant cost of a permanent culvert is oftentimes less than what it would take to build a wooden bridge necessary to span the ditch.

Here are two instances of reducing the waterways, or rather of filling up an open ditch: First, where three wooden bridges had been built in thirty-five years, the last one was 44 feet long, and it had served its time, so it was removed and a concrete culvert was built with inside dimensions of 4x5 feet; and this culvert has proved ample for all the water that can flow in the ditch. Another bridge 56 feet long which had grown from a span of 16 feet in ten years was rendered unsafe by the bank slipping in, breaking off the piling. This was replaced with a concrete culvert five feet square and thirteen feet of dirt placed on top, making a permanent roadway instead of having a plank floor over a deep gully.

These two cases show that often there is a plank roadway where it would be possible to have a dirt road.

Then such gullies or washouts are usually at the foot of a hill or between hills, and the cutting down of the hills and filling in of the culvert improves the whole road and makes a permanent improvement.

Having these conditions, it is well to consider the various materials available for constructing such culverts as needed.

Large sewer-pipe has been used with varying degrees of success. Much depends on the placing of the pipe and the character of foundation on which they rest, and in the cementing of the joints.

The disadvantage is in the frequent unequal settling of the pipe when the earth is filled in, and this causes a break in the flow of the water and will tend to fill up the pipe, likewise increasing the chances of undermining the pipe.

To make a concrete footing for the pipe and to carry this up the sides to the horizontal diameter adds greatly to the cost, while it improves the value of the pipe as a culvert.

End walls over the top of the pipe are needed to prevent the fill from washing down into the opening; also wing walls are necessary to hold the dirt on the sides.

The attaching of these walls to the pipe is a difficult matter and is usually very unsatisfactory, owing to the fact of not being able to get a good bond between the pipe and the concrete or mortar of the walls.

There have been many types of circular steel culverts brought into the market in the past few years. All of them seem to have some merit if we can believe the arguments set forth, but all have the same fault in common, the rusting, which is not prevented by any process, permanent.

The same objection of attaching wing and end walls to this type of culvert as with sewer pipe is true.

For any given area of carrying capacity it is possible to construct concrete culverts as cheaply as the steel pipe, and the concrete culvert is with wing and end walls.

Having considered briefly about all the kinds of bridges and culverts in use at present, let us now turn our attention to the adaptability of concrete as applied to the problem of making permanent highways of travel for all times to come in so far as this generation and several following generations are concerned.

Concrete is a mixture of cement, sand and crushed stone, so proportioned as to make a dense artificial stone, with no direct planes of cleavage or seams.

It is brittle as stone and can be used to support enormous loads as in foundations, bridges and the like, provided it is so placed as to receive no tension or pull.

With the addition of steel in the concrete to withstand any pull we have a combination of materials excellently adapted for many purposes where stone could not be used.

In an ordinary beam, of any material, the upper surface is in compression and the lower surface is in tension, or the particles of the lower side of the beam tend to separate when a load is applied on the top surface.

The natural arrangement, therefore, in a concrete beam is to design a beam so that the upper portion is composed of concrete, which takes care of the compression, and with steel imbedded near the bottom to resist the pull or tension.

The concrete, by surrounding the steel, makes a sure bond between the two materials, and likewise protects the steel from any action of the elements or any other causes destructive to it.

Concrete and steel expand and contract almost exactly the same, so it is safe to use the combination without the possible danger of separation due to any changes of temperature.

To make a safe combination of concrete and steel it is necessary to know just how much load each can stand, and just where the steel must be located to take care of every bit of tension in the concrete.

Then, too, there are other secondary stresses in the interior of the beam, a tendency to slide or shear, and partly a tension or pull which must be guarded against by properly placing the steel rods. Because of these complications of stresses it is necessary in the designing of bridges and culverts to have a knowledge of these principles in order to make permanent and lasting structures.

Too many culverts and small bridges are being built today that are not in any way permanent, and such work as this will do great harm in the growth of the use of concrete for such purposes. These faulty structures may in some cases be credited to the desire of some one to economize, by using too weak mixtures, and in others to the contractor's zeal to make a large profit.

Ignorance of workmen is sometimes the cause of a failure. In no case should a culvert or concrete bridge be built by the cut and try method, for this will frequently show a failure when the forms are removed.

Recently I had occasion to inspect a culvert, of reinforced concrete, that had been built less than three months and had not yet been subjected to any freezing or heaving due to the frost. This culvert had apparently been built by the foreman in charge without any plans or directions, for it was badly cracked from the weight of the earth load. The fill on top of the culvert was 10 feet. These cracks were generally at right angles to the center line of the culvert showing that the contractor did not know or paid little attention to the many stresses on such structure. Reinforcing had been left out of the bottom entirely, showing that no attention was paid to the upward pressure on the bottom, which was broken in several places and was heaved up more than six inches.

Such designing and construction is in no wise permanent and is expensive in first cost almost as a culvert built along proper lines.

It is not the purpose of this paper to take up the design, so much as the practical principles of construction of culverts and bridges of concrete.

Portland cement should always be used for concrete construction, because it is stronger and more reliable and hardens more quickly than natural cement. The cement should be of a standard brand and not liable to expansion or disintegration, fine and of uniform quality. It should be free from lumps and always stored in a dry place.

For the aggregates in concrete the sand should be clean and coarse, or a mixture of coarse and fine, the coarse grains predominating. It should be free from clay, loam and sticks, organic matter and other impurities.

Screenings or crusher dust from broken stone may be substituted for sand by altering the proportions so as to give a dense mixture and the same relative volume of aggregates.

Gravel when used should be composed of clean pebbles, free from foreign matter, and containing no clay or any material adhering to the pebbles. It should be screened to remove the sand and should be mixed afterwards in the proper proportions. However, if by test the gravel runs in the proportions of two and one-half to three parts of sand to from four to five parts of pebbles, it can be used without screening.

Broken stone should consist of pieces of hard, durable rock, such as trap, granite, limestone or conglomerate.

The water used in mixing should be clean and free from acids or strong alkalies.

Steel for reinforcing should be of high tensile strength and of such shape as to form a firm bond with the concrete.

In mixing concrete for the construction of culverts and bridges the proportion should be such as to give the densest concrete with the maximum strength of the cement mortar.

The mortar mixture of sand and cement is generally two parts of sand to one of cement, yet I have used two and one-half and sometimes three parts of sand and obtained a mixture that proved dense and for walls and footings proved as good as the two to one mixture.

The stone aggregate in the proportion of four parts will in most cases make the most desirable mixture, as it allows for enough mortar to surround all the stones and leaves no stone pockets in the concrete surface.

Mixing concrete is a vital thing in the strength of a structure, whether large or small. "Mix well and mix wet" should be pasted in every man's hat on the work, and by so doing many faults will disappear.

Exposed surfaces of concrete may be made sufficiently smooth by spading, so as to force the stones back and the mortar to the surface of the forms. The forms should be sufficiently tight to prevent the mortar running out. With these precautions, surfaces can be obtained that require very little patching or plastering to make a neat job.

The forms should be made of lumber sufficiently strong to hold itself in line without an excess of bracing, and not bulge or be thrown out of line by the workmen filling them. All exposed surfaces should be made with dressed lumber. All joints should be fitted neatly. The lumber best adapted for building the forms for culverts and bridges is 2x6-inch stuff dressed and with 4x4 inches for the stays. The handiest ties are half-inch belts of a length necessary to hold the forms together. With care in removing them they can be used several times. Bolting the forms requires few nails and makes a form that can be easily taken down. Then it is possible to get the wall of the required thickness and be assured it will not bulge out of line or shape.

The time necessary to leave the forms in place varies considerably with the weather. But under ordinary circumstances wing walls and culvert sides can be removed in three days.

Slabs of not more than 6-foot span may be removed in five days. Long arch spans and slabs require no less than ten days of good drying weather. In freezing weather the forms should be left in place as long as possible.

Reinforced concrete culverts can be constructed successfully for all spans up to fifteen feet and give perfect satisfaction. They should be designed to carry the maximum earth load that could be put on top, as in the grading and leveling the roads would sometimes make an increasing earth load, from year to year.

The wing walls should be at least 10 feet long if the earth fill is more than 5 feet, and an end wall should always be high enough to prevent the dirt from spilling over into the waterway of the culvert.

The wings should in all cases be placed at an angle of 30 degrees with the center of the culvert.

End walls across the top of the culvert should be no less than 4 feet high, and if the fill is more than 8 feet they should be 6 feet high. The higher the wing and end walls the wider the width of the roadway.

Bridges of spans greater than 15 feet and up to 30 feet should be with concrete girders. Spans greater than 30 feet should be arched.

The design and construction of the concrete bridges should always be in the hands of competent engineers and workmen.

With concrete bridges we have something that improves with age and is as permanent as anything can be. All that is needed to make them so is the use of the best material, good workmen and designs that have the approval of engineers versed in the work.



**The National Lime
Manufacturers' Association**

Meets Semi-Annually.

W. E. Carson, Riverton, Va.	President
A. Newton, Chicago	First Vice-President
F. M. Palmer, Jr., New York	Second Vice-President
F. P. Hunkins, St. Louis	Third Vice-President
C. W. S. Cobb, St. Louis	Treasurer

Official Organ, ROCK PRODUCTS.

From the National President.

To the Lime Manufacturers of the United States, Greeting: A number of manufacturers, in response to my request that they join the National Lime Manufacturers' Association, have asked me to explain the plan of the association, and to show them wherein they would be benefited.

Now I am going to direct this open letter along the line of a response to such questions.

The National Lime Manufacturers' Association is a strictly trade organization, and has in it no element pertaining to a trust or combination. Its intention is to bring together the lime manufacturers from the different sections of the United States so that they may know each other and discuss plant economics, manufacturing problems, trade perplexities, and get, one from the other, advice and counsel, and generally broaden the field for the use of lime. This is altogether practicable, and has meant, in the lime industry, a great uplift.

Lime is a perishable article, bulky and heavy, so that it is bounded by the zone of its freights, and therefore a more thorough and general discussion of its problems can be participated in without reserve than with many other articles that are manufactured, as in a field as large as the United States it is only a very few manufacturers that any one manufacturer comes in competition with, and, therefore, there is no necessity for reserve on the part of a manufacturer in discussing questions at these meetings. This general discussion has brought out and developed many points that no individual manufacturer could have worked out by himself, for it is a well known principle that combined effort and thought is more effective than individual effort or thought.

Since the inception of the National Lime Manufacturers' Association the lime business has taken strides that has placed it well up in the front rank of the larger manufacturing industries, and today



WILLIAM E. CARSON, RIVERTON, VA.
President National Lime Manufacturers' Association.

the lime business is as little to be compared to the lime business of six years ago (when the National Lime Manufacturers' Association was first established) as the steel or cement business is to twenty years ago. Had it not been for the National Lime Manufacturers' Association, this general uplift would not have obtained, and the lime business would have been as much a thing of the past as is the shoemaker's trade, for, with the growth of cement and hard wall plaster, had not some of the problems in the manufacture of lime been worked out by which cheaper production is obtained, and the development of the hydrated product been pushed along, lime, long ago, would have gone to the wall.

As long as there was an abundance of wood, it was a very simple matter to manufacture lime, for with wood a heat was generated that did not destroy the kilns or overburn the product. Such difficulties as are met with in coal-burning could not have been worked out individually, and it has only been by the swapping of ideas and the trading of experience that, at present, lime is manufactured better and cheaper than when made with wood.

There is no problem in the manufacture of lime that has not been discussed, either by papers offered on the subject or by informal discussions at the annual and semi-annual meetings of the manufacturers, and these papers have been offered by practical and experienced men. For instance, if a manufacturer should want to know something about how to handle his quarries, we have had papers on this subject under the following titles: "Quarry Work," by A. A. Stephens; "Quarry Work on the Contract System," by H. O. Duerr; "The Advantages of the Steam Shovel in the Limestone Quarry, and the Use of the Dummy Engine for Delivering Stone to the Incline," by Charles Warner; "Modern Quarrying and Modern Quarry Appliances," by C. A. Burgess; "Utilizing Quarry Spalls," by Carleson Ellis; "Quarry Operation," by George B. Christian.

The different problems in the quarry have been covered by these papers. Added to this, is a general discussion on these subjects that has been developed and brought out by the different manufacturers asking questions not only pertinent to the papers offered, but questions asked as to the different problems each individual manufacturer has had in his quarry, so that almost every phase of quarrying has been discussed.

Covering the burning of lime, papers have been offered such as "The Fundamental Principles of Combustion and Draft, as applied to Limekiln Practice," by Charles Warner; "A Study of Combustion in Relation to Lime Burning," by Charles Ekstrand; "The Application of the Combustion Utilities Company's Process," by T. E. Fleischer; "Gas-Fired Kilns," by A. C. Seward; "The Improved Doherty Gasifier," by N. Nisbet Latta; "The Application of Producer Gas to Limekilns," by H. P. Dodge. These papers and the discussion of them practically cover the use of coal in burning lime, and any manufacturer who has a problem to work out can get from these papers and their general discussions practically all the information that has been so far developed.

In the burning of lime by coal, one of the greatest troubles encountered is the destruction of the kiln lining. This is covered by an article on "Fire Brick Lining for Limekilns," by Wm. E. Carson. The question of drawing and handling the kiln is

covered by an article entitled the "Throttle Valve of the Lime Plant," by Wm. E. Carson. On the question of kiln construction is a paper on "The Rotary Kiln from the Lime Manufacturer's Standpoint," by R. S. Edwards; "Our Experience With the Combustion Utilities Company's Limekilns," by T. E. Fleischer, and "Limekiln Construction in England," by Wm. Sewell. A new fuel for use in limekilns has been covered by a paper on "Peat Fuel for Burning Lime," by F. J. Bulsack.

One of the most important steps in the development of the lime business is the hydration of lime. Papers on the discussion of this subject can be found under the heading of "Hydrated Lime and Lime Tests," by R. S. Edwards; "A Study of the Hydration Problem," by H. E. Bachtenkircher; "Some Uses of Lime and Hydrated Lime," by E. W. Lazell; "A General Discussion of the Hydrating Process," by Robert S. Edwards.

On the use of lime for agricultural purposes, there are papers on "The Agricultural Use of Lime," by Prof. H. J. Wheeler; on the "Treatment of the Soil; a Question of Consideration for the Farmer," by Prof. George Waring; "Lime and Liming for Agricultural Purposes," by W. S. Sutliff; and on the more general uses of lime are papers on "The Sand-Lime Brick Business," by H. O. Duerr; on "The By-Products of Lime," by J. C. Gossman, on "The Possibilities of Lime in Water Filtration," by C. Arthur Brown; on "The Uses of Lime," by S. V. Peppel.

Covering the question of handling hydrated lime is an article on "Drying Principles and Apparatus," by Wm. Ruggles; on the plan of covering the handling and selling of lime is a paper on "Statistical Records," by Walter S. Sheldon, and on that most important point of all, how to get better prices, and the harmonizing of manufacturers, are papers entitled "Association Work," by Peter Martin, "Two and Two Make Four," by W. S. Sutliff, and "The Question of General Organization," by Peter Martin.

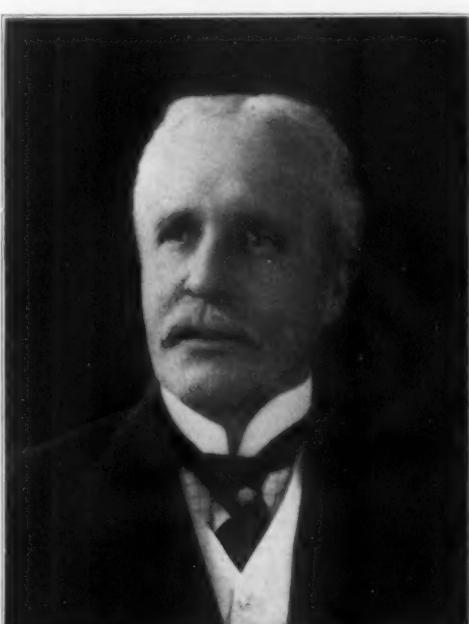
It will be seen that, already, a library on the subject of lime has been compiled, and no manufacturer can do justice to himself not to have these data to refer to.

There is but one way that any manufacturer can get this library, namely, by joining the National Lime Manufacturers' Association, and it is self-evident that no up-to-date manufacturer can afford, for the sum of \$25 (which is the membership fee), to remain out of an organization that is giving its membership such valuable and instructive information, and which gives its membership an opportunity to discuss the different problems that it meets with from day to day with some other manufacturer who may have already worked out the problem that is hanging him up, for a bond of fellowship is created at these meetings that makes it an open sesame for one manufacturer who belongs to the association to write his fellow-member on any problem that may be troubling him.

Added to this, the National Lime Manufacturers' Association is founding an Engineering Club and will employ a competent chemical engineer to work out for its members any problems they may have,



A. NEWTON, CHICAGO, VICE-PRESIDENT.



F. P. HUNKINS, ST. LOUIS, VICE-PRESIDENT.

and to investigate the broader fields for the use of lime.

I will not go into a discussion of this subject in this letter, as in the next edition of ROCK PRODUCTS the manufacturers will be fully informed on this subject.

With this outline of the usefulness of the National Lime Manufacturers' Association I will bring my letter to a close by issuing a hearty welcome to any manufacturers who wish to join the National Lime Manufacturers' Association.

The entrance fee is \$25, which is the amount of the annual dues, and the entrance fee is accepted as the payment of one year's dues.

Yours truly,

W.M. E. CARSON,
President National Lime Manufacturers' Ass'n.
Riverton, Va., March 20, 1908.

The Great Knickerbocker Plant.

PHILADELPHIA, Pa., March 19.—The quarries, rock-crushing plant, lime-burning plant and lime-hydrating establishment forming the complete group of the Knickerbocker Lime Company's manufacturing operations are located at Mill Lane, Chester County, a short distance from this city on the line of the Philadelphia and Reading Railroad and on the Schuylkill River, being thus equipped with admirable transportation facilities both by rail and by water. The limekilns were first established about 1867 by what was then the firm of Irvine & Carty, but which for many years has been known as the Knickerbocker Lime Company, with William B. Irvine as the commanding spirit.

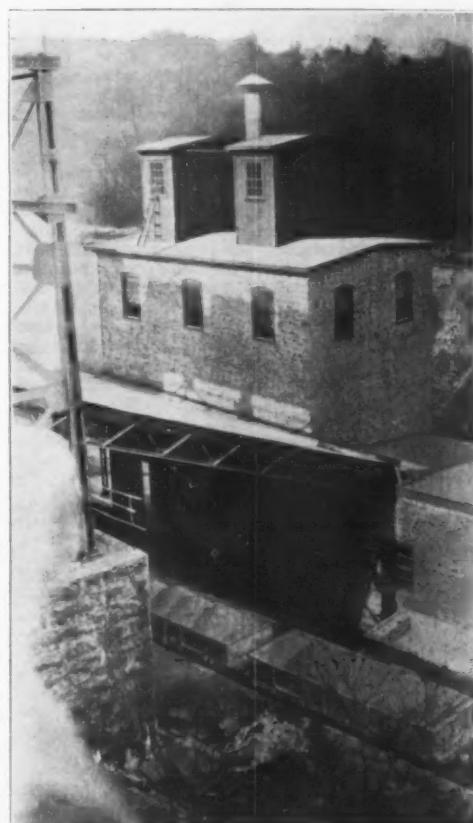
The plant is unique in many respects, as a glance at the illustrations herewith will show. All the buildings of the entire group of plants, including kilns, sheds, the crushing and hydrating establishments as well as offices and tenement houses for the help, have been built of solid, permanent and high-grade materials and upon lines of massive construction so that each and every part is the best that money could buy or that genius or skill could produce.

The quarry comprises an area of about 380 acres of excellent dolomite stone. The crushing plant is provided with two No. 6 crushers backed by a No. 4 crusher for breaking up the tailings of the first two, and the plant has a steady capacity of 1,000 tons a day. The railroad equipment at the plant is very complete, all of it being solidly ballasted and of standard gauge. The equipment consists of about 200 full-sized freight cars with three locomotives for switching purposes. The tracks run to every part of the extensive operations where they are in any way useful and connect with the Philadelphia and Reading tracks.

In all there are twenty limekilns in two distinct groups, one antedating the other by several years, but all of the best approved modern construction and equipped with a full complement of quarry cars that dump the limestone into the top over an industrial railway extending into the quarries. The calcined lime is drawn into spacious stone-built cooling chambers beneath the kilns, the floors of which are on a level with the top of the cars on the loading track, in this way providing the most economical loading system. The annual capacity is regularly 1,500,000 bushels.



THE OLDER LIMEKILNS OF THE KNICKERBOCKER LIME COMPANY.



THE KNICKERBOCKER COMPANY'S HYDRATING PLANT.

The hydrating establishment has been recently finished by the installation of a complete outfit of machinery furnished by the Kritzer Company of Chicago. It is contained in a solid stone building especially designed for the purpose, and every up-to-date improvement has been included in the outfit such as dust prevention appliances, etc. The hydrating capacity is about thirty tons per day. Like everything else about this group of mammoth plants, it is most perfect in every detail and ahead of all others in this way. It is the first equipment of the kind in the East, and is an illustration of Mr. Irvine's keen foresight into the ever-developing needs of the lime industry. He has the same confidence in this newest branch of his extensive interests as characterizes the whole. Having built with solid foundations, using always the best materials both in buildings and in machinery equipment, without regard to first cost so far as money can buy quality, Mr. Irvine feels entitled to expect the highest kind of results. In this he is to be congratulated, for the stamp of permanent high quality in every detail of the great group of plants at Mill Lane is the first and lasting impression to the visitor.

The product from this plant is marketed locally by the Knickerbocker Lime Company through its Philadelphia office and warehouse, which will be illustrated in the April number of ROCK PRODUCTS, and also by boat to ports on the Atlantic seaboard and by rail throughout a wide territory.

Colorado Lime Manufacturers.

DENVER, Col., March 14.—The largest manufacturer of lime in this section is the Colorado Lime and Fluxing Company, whose office is at 322 McPhee Building. According to Secretary F. L. Perry their rock is known as "blue" rock and in character it is a very solid formation. The deposit is mountainous and does not require much stripping. There is a lowering tram, worked by gravity, to the kilns about one-half mile distant. The company has three kilns at their Newett plant on the line of the Colorado Midland and South Park Railway, and seven at Lime Creek and Meredith. The total capacity of the ten kilns is 600 barrels of lime per day. Coal is used for fuel. They ship most of their product in bulk. Their brands are Marble and Simpson white lime. Besides manufacturing lime, the company does an extensive business in quarrying rock for fluxing purposes for smelters, and lime rock for sugar factories.

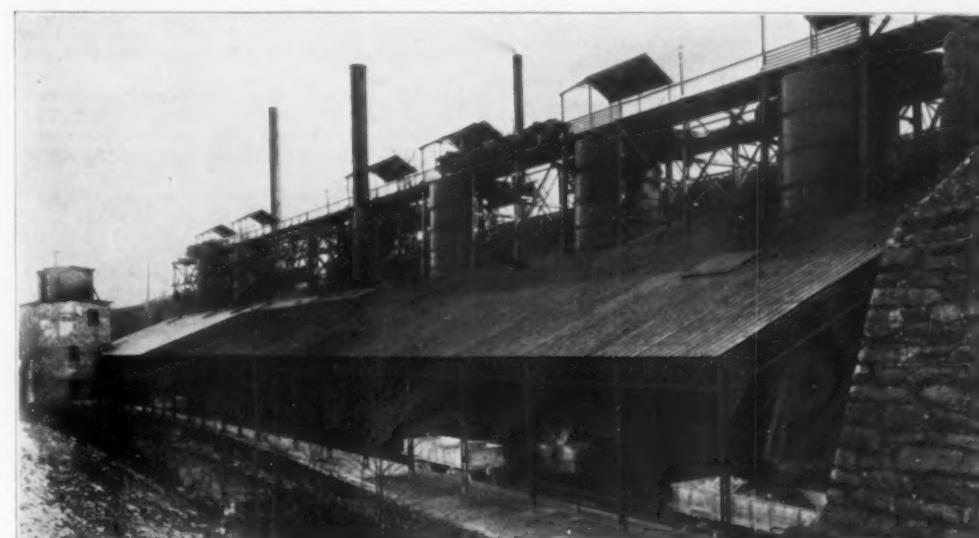
The Leadville Lime and Fluxing Company, office 318 McPhee Building, have quarries and kilns at Thomasville, on the line of the Colorado Midland Railway, and their product is marketed under the brand of Leadville white lime. The company also furnish fluxing rock for smelters.

Installs a Shovel.

MARION, O., March 11.—The Ohio and Western Lime and Stone Company is making some extensive improvements at the quarries of the old Central Ohio plant. A fine new Marion steam shovel was taken to the quarry and will be set up and placed in operation by the first of next week.

A set of dumping-cars have been ordered and will be placed in commission at the same time as the steam shovel. The shovel will be used mainly for stripping purposes, but later may be installed in one of the quarries for loading stone. The shovel is of medium size and is of the No. 60 model.

When the new equipment is instituted the stone company will be able to work with double the speed of former days. In case the shovel proves the valuable equipment that is anticipated, the company will purchase one or more additional machines.



THE NEW LIMEKILNS OF THE KNICKERBOCKER LIME COMPANY.

CEMENT

Quarterly Meeting.

The next quarterly meeting of the Association of American Portland Cement Manufacturers will be held at the Bellevue-Stratford Hotel, Philadelphia, on April 13-14-15.

Following the usual method of procedure, the executive meeting will be held Monday evening, April 13. On Tuesday, the 14th, the regular business meeting of the association will be held, and Wednesday, the 15th, will be devoted to the reading of technical papers, the exact titles of which have not been made public.

Volcanic Ash With Cement.

Supplementing his previous note upon the use of volcanic ash with cement, Consul George H. Scidmore of Nagasaki, Japan, writes:

"The Kyushu Volcanic Ash Company, near Karatsu, on the northwestern side of this island of Kyushu, simply makes use of that species of volcanic earth known as 'pozzuolana,' which is stated to have been used in hydraulic cements in Italy as early as 200 B. C. Portland cement, when used alone for marine work, is liable to crack and cause serious damage after a lapse of time, and the reason given for this defect is that the 'free' lime which is produced during the setting of the cement combines with sulphuric and carbonic elements.

"Credit is given to Dr. Michaelis, a German, for solving the problem by the admixture of pozzuolana, his theory being that the soluble elements of the pozzuolana absorbed and combined with the 'free' lime of the Portland cement and thereby not only neutralized any harmful effects, but, by judicious treatment, helped to give greater tensile strength to the compounds than if the cement were used alone. A more compact setting, special value in sea work, and cheapening of cost are other important advantages claimed for the addition of pozzuolana.

"The abundant deposits of this material throughout the volcanic regions of Japan have led to a careful study of the question and resulted in the establishment of several plants in this district.

"The pozzuolana is dug from the hillside and conveyed in carts to adjacent mills, where it is spread on an open field for drying. Later the drying is completed over furnaces and the material is then ground and sifted through sieves of 2,500 to 5,000 perforations to the inch. Of several species of pozzuolana the company prefers that of a heliotrope color and special to the Karatsu district. Samples of it, both crude and in powder, accompany this report, and have been furnished to Commander Smith for experiments in the Philippines. [The samples will be loaned to business firms making application to the Bureau of Manufactures.]

"As a result of experience, the following mixtures are recommended, the proportions being in volumes:

"For harbor, dock, and general sea work, ash 3, cement 2, sand 10; for water works, drains, river embankments, roads and tunnels, ash 3, lime 1, cement 1, sand 10; for drains and plastering, ash 4, lime 2, cement 1.5, sand 10; for foundations and brickwork, ash 1, lime 1, sand 30 to 40; for concrete add gravel one and one-half to twice the quantity of sand used. Sand and gravel should be well washed and partially dried before mixing. The following directions for mixing are given: Place the kneading stand at the desired spot. Have all the materials ready at hand. Have volcanic ash and lime or cement well mixed as desired, and adding sand to it, mix it again, pouring in a proper amount of water; knead it over and over, using sufficient pressure, and covering entirely the outside of sand with volcanic ash, etc., knead them until the different materials lose their own colors and come to one color.

"The ash, ready for use, is packed in straw bags, weighing about 140 pounds each, the prices for which are at Nagasaki 70 sen (35 cents), at Kobe 80 sen (40 cents), and at Yokohama 1 yen (50 cents). In large quantities the prices, free on board ship, per ton of 2,000 pounds, are at Nagasaki and Shimoneseki (Moji) 10.5 yen (\$5.23), at Kobe 12 yen (\$5.98), at Yokohama 15 yen (\$7.47). Freights from Nagasaki and Shimoneseki (Moji) to Seattle and San Francisco per ton of 2,000 pounds are about \$4, and from Nagasaki to Manila about \$2.50."

Montana is next in line for the erection of a cement plant. Important examinations have been made by Prof. A. H. Phillips, Princeton University, Princeton, N. J.; Prof. H. J. Detweiler, Allentown, Pa., and Ricketts & Banks, New York. The property is located about four miles south of Havre, near Butte, Mont.

THE NORTHWESTERN STATES.

On February 14, 1908, the first cement of the big \$2,000,000 factory of the Northwestern States Portland Cement Company was actually manufactured, and from this time on the manufacture of the coming building material of the world will be continued unceasingly.

The first work of this group of mammoth buildings, covering a ground area of more than 25 acres, began a little more than a year ago.

The Cowham genius for organization in every department has its greatest demonstration in the fact that in little over twelve months after the first foundations for the immense buildings were laid the raw material was being transformed into the finished product. It is worse than waste to invest in expensive machinery such as is found in the great power-house, in the big kiln building or in any of the "raw grind" or "finish" departments without solid foundation and the most complete protection. Thus it is that all the heavy pieces of machinery, the big engines, the rotary kilns, the ball and tube mills are set on massive concrete foundations laid on the solid rock. Even the piers for the trestle work of the railroad are of concrete, expensive at first cost of course, but never to be replaced as long as the plant lasts. Permanence is written large on every foundation, on every floor, on every wall, for they are the best that concrete and structural steel can make.

The power is generated by three 1500-horsepower engines driven by five batteries of duplex boilers. These engines transmit their power to the ponderous machinery of the various buildings through three 1,000-kilowatt generators, one for each engine. If one engine must be repaired or stopped, the other two have capacity for the demands of the factory. If one tube mill must be stopped because of unforeseen accident to itself or its propelling motor, the rest go steadily on. If one motor fails, the second is put into action, and thus throughout the great institution there is the minimum of delay that means the highest efficiency and economy.

The rock deposit here has very high qualities. When blasted it shatters into small fragments easily handled by the big 125-ton steam shovel which picks up the material six tons at a lift. A string of eight dump cars, each with a capacity of two such shovelfuls, is thus loaded and hauled to the crushers by one of the two baby engines every eight minutes.

A big No. 9 crusher which munches the biggest pieces of rock as though they were fragile glass, first takes this output of the quarry, and it is then elevated to a set of screens where the larger pieces which fail to pass are carried to two No. 6's and the process again repeated.

Having passed the crushers, as much of the rock as is needed goes directly to the dryers, and the residue to the storehouse, with a capacity for three months' supply. When thoroughly dried it is thence conveyed to the pulverizers or ball mills.

The clay and rock are mixed in chemically correct proportions by a mechanical mixer before going into the tube mills for the completion of the raw grinding.

There are ten rotary kilns 110 feet long and 8 feet in diameter. These kilns have a maximum capacity of 500 barrels each per day, and room has been provided for the installation of two more.

An exact record is kept of every barrel of cement manufactured. A corps of expert chemists, in charge of a laboratory complete in every detail, have control of the material and processes. After leaving the rotaries chemical tests are made at short intervals of the clinker before reaching the pulverizers, and again in the packing-room when being finally loaded on the cars for shipment. An accurate record is kept for possible future reference.

The output of "Northwestern" brand will be 1,500,000 barrels annually. The general sales office is at Mason City, Iowa, and the company also has offices at Jackson, Mich., and 515 Andrus building, Minneapolis, Minn. The directorate of the Northwestern States Portland Cement Company is as follows: W. F. Cowham, president, Jackson, Mich.; E. J. Breen, vice-president, Ft. Dodge, Iowa; C. H. McNider, treasurer, Mason City, Iowa; W. H. L. McCourtie, secretary, Minneapolis, Minn.; A. C. Stich, Independence, Kan.; Thomas H. Dinsmore, New York City; J. H. McNair, Halstead, Kan.; N. S. Potter, Jackson, Mich., and W. W. Hawley, Huntington, Ind. H. B. Hasbrouck, sales manager, Mason City, Iowa.

Cement in Utah.

The Union Portland Cement Company of Ogden, Utah, whose new mill is located at Devil's Slide in the northeastern part of the State, is a typical example of the newer cement mills in the West.

The raw material consists of lime rock and shale. The plant has a regular capacity of 2,500 barrels a day and is so arranged that its capacity may be

doubled when the demand shall justify such expansion.

The rock is loaded into 5-ton cars with a 60-ton shovel, taken to the crusher house, and there dumped into a No. 9 crusher; further it drops into two No. 6 crushers and then through two rolls, then to the proportioning bins; from the bins it passes over the scales to a conveyor belt which conveys the rock to the blending bins, holding 4,000 tons each. After it is sampled it goes to the dryer house, equipped with two 6x60-foot dryers, the furnaces of which are fed by mechanical stokers. Bucket conveyors convey the rock from here to the raw grinding mill, which is equipped with No. 66 kominutors and No. 18 tube mills. After grinding it is taken to kilns, of which there are three, 8x150 feet, carried at three points by ring roller bearings. The clinker from the kilns drops into three 6x60-foot coolers and is taken by bucket conveyors to the cement mill, which is a duplicate of the raw grinding mill. Screw conveyors take the finished cement to the storage bins, which are of the circular style, discharging from the bottom. The coal is dumped in hoppers under the tracks and taken by bucket conveyors to storage bins, whence it is taken to the coal-house, equipped with dryers, kominutors and tube mills. The machine-shop is 75x150 feet, equipped with all necessary machinery for every kind of necessary repairs, owing to the distance from first-class machine-shops. The power is furnished from a central powerhouse in which are installed turbines, engines, generators, air-compressors, condensers and pumps. The steam is furnished by a battery of five 500-horsepower boilers.

The crushers, kilns, coolers and dryers were furnished by the Allis-Chalmers Company, the kominutors and tube mills by F. S. Smith & Co., the coal dryers by F. N. Cummer & Sons Company, the rolls by the Williams Patent Crusher Company; engines and stokers by Westinghouse Machine Company, the condensers by the Aldridge Company, the compressors by the Ludlow-Dunn Company.

All of the machinery is individually driven by alternating motors, of which there are eighty-nine in use in the plant, which, together with the generators and switchboard, were furnished by the Fort Wayne Electric Works.

The workmen reside in the village built by the company, situated about half a mile from the works, all the houses, stores and hotel being built of cement. The town is furnished with electric light, gravity water system and sewerage. The office of the company is 40x60, three stories and basement, one-half of the first floor being used for a laboratory and the upstairs for a drafting-room and sleeping quarters. The office building is also built of cement.

The officers of the company are: President, C. W. Nibley; vice-presidents, Reed Smoot, Joseph Scowcroft, M. S. Browning; secretary and treasurer, James Pingree; assistant manager, O. B. Gilson.

Machinery is being installed at the plant of the United States Portland Cement Company, near Florence, Col. Work at the mill will be started about April 1.

The Gainer Engineering Company of Independence, Kan., are about to push to completion the work on the plant of the Monarch Portland Cement Company at Humboldt, Kan.

The Penn-Allen Portland Cement Company have been fortunate in securing as their representative William M. Burchfield, for many years connected with William S. Humbert, Inc., of Buffalo and Niagara Falls, N. Y.

The Alpha Portland Cement Company resumed work at one of their idle plants at Martin's Creek, Pa., on March 18. The second plant will be in operation April 1, and both the plants at Alpha, N. J., are to be running May 1.

The Dakota Portland Cement Company has been incorporated at Chamberlain, S. D., by D. B. Zimmerman, James Brown and W. H. Pratt, Jr., of Chamberlain, and Eugene Sanger, C. O. Bailey, J. H. Voorhees, and F. B. Eaton of Sioux Falls. The company will have a capital of \$2,000,000, and will develop deposits of raw material along the Missouri River near Chamberlain.

The cement mill which the Government built for use in making the celebrated Roosevelt Dam in connection with the Salt River project is said to have justified its construction. The utility of the plant is not limited to the Roosevelt Dam. Near Phoenix, Ariz., a large diversion dam is to be built requiring 50,000 barrels of cement, and it is estimated that it will be cheaper to make it at the Government mill at Roosevelt and haul it sixty miles to the new dam than to buy it in the open market. The total cost of the cement mill was \$218,380.57. It has already paid for itself and will affect a saving on this job alone of something like a million dollars.



Proposed Plasterers' Association.

Since the International Employing Plasterers' Association of New York has gained publicity through the columns of ROCK PRODUCTS the organization has received a large number of communications from employing plasterers throughout the United States. These inquiries show the urgent need of similar organizations throughout the country and of an association national in its scope.

Arrangements are being perfected by the New York plasterers to send authorized delegates to meet the representatives of other plasterers in other cities, and it is the opinion of Thomas J. Mannion, president of the International Employing Plasterers' Association, that rapid strides are being made in the direction of a powerful national organization. It is to be hoped that the efforts which will be put forth by the New York association to extend the benefits of mutual protection to other cities and States will be rewarded in the largest measure.

The journeymen plasterers are banded together in a union of international power and influence, and it seems ridiculous that the employers have not an organization of equal strength able to cope with every question which presents itself in the everyday life of contractors.

To hear the expressions of New York plasterers in regard to the benefits they have already received from their organization in negotiating with labor unions and in the settlement of claims against unscrupulous builders, would convince the most independent contractor of the advantages to be obtained from such an organization for mutual protection. They liken themselves before the formation of the association to an unorganized army, where the soldiers spent as much time settling their own petty grievances as in fighting the enemy. They believe that this expresses the condition of their more unfortunate brothers in other parts of the country at the present time.

The New York association has had a wonderful growth, and many who were most violently opposed to any such movement in the beginning are now its most ardent supporters. The members are interested in the formation of a national body on account of the benefit to be derived from it by contracting plasterers throughout the country, and the greater strength, power and influence which the New York association will gain by binding itself with like bodies in other cities. Nearly every other industry except this has a national organization of great power, and the plasterers are beginning to realize that the time for decisive action is at hand. With the New York association as a nucleus, it will be comparatively easy to extend its influence and cause the rapid growth of a large and powerful organization. Contracting plasterers in every city and State requesting same will be furnished a constitution, by

laws and other particulars by the International Employing Plasterers' Association from their office at 74 West 126th Street, New York City.

A Well Known Plasterer.

Joseph J. Van Note is one of the best known plastering contractors in the city of New York, and affectionately termed by his associates in business "the grand old man of the plastering industry." He is the senior member of the firm of Van Note & Sinclair, at 751 Dawson Street, Bronx Borough. Mr. Van Note was born on April 18, 1841, in Monmouth County, New Jersey. After serving a short term as a practical bricklayer, he entered the ornamental shop of E. & W. Robinson in New York. The spring of 1857 found him at work as an apprentice at Ft. Sumter, S. C., where his employers had the contract for ornamental plastering in the various offices connected with the historic fort. On August 18, 1857, Mr. Van Note finished his apprenticeship and started for Omaha, where he began plastering and bricklaying, and continued at the trade in that city for two years. Then returning to New York, he again entered the employ of E. & W. Robinson. At that time the firm had an office on Twentieth Street near Broadway. The remoteness of the location which today is considered "downtown," can be better imagined when Mr. Van Note recalls to memory the sight of droves of sheep herded in what is now Madison Square. He used to cross many vacant lots in journeys from his home at Thirteenth Street and First Avenue to the office of his employer. Until the beginning of the Civil War, Mr. Van Note continued to work for the Robinsons, and then, when hostilities practically ended the building business, he began work as a knapsack manufacturer. This occupation ended, Mr. Van Note went to Springfield, Mass., where he helped to make muskets for the Yankee soldiers. The war ended, he returned again to plastering, but soon left his trade once more and entered the employ of Browning, King & Co., where he remained for eleven years. Up to this time Mr. Van Note had never been an employing plasterer, but twenty-one years ago last September he began his career as a contractor in New York City. There are but few, if any, men with such a long and fair record to their credit as Mr. Van Note. His partner, Mr. John Sinclair, is a young man, and has been engaged in business with Mr. Van Note for the past ten years. The firm has an enviable reputation for the satisfactory performance of contracts in their chosen line of business, and both men are enthusiastic members of the International Employing Plasterers' Association.

Annual Report of U. S. Gypsum Company.

The income account of the United States Gypsum Company for 1907, just published, shows a surplus of 9.6 per cent on the net profits for the year after deducting for repairs, depreciation, etc., and adding \$50,000 to sinking fund reserve. The net profits of the year are \$569,901, as compared with \$430,798 in 1906, a splendid testimonial to the excellent management of this ably managed concern, which operates about forty-five properties in various parts of the Central West, and which now proposes also to purchase during the present year a mill and mine on the Pacific Coast and to start a new mill at El Dorado, Okla.

President S. L. Avery says in his annual report: "The year 1907 was, in tonnage and earnings, the greatest in the company's history. The increase of tonnage was not, however, of the higher priced products, which branch of the business has been sustained only in the face of keen competition. Demand during the year was generally strong, but the car shortage had a noticeable effect in restricting our output during the periods when rolling stock was unavailable."

"The financial disturbance encountered in the last quarter did not indicate itself materially in the company's business, this being easily explained by the fact that buildings on which our products are used were at that time in the course of erection and contracts compelled their completion. * * *

"Previous reports to you have indicated the aims of the management in discovering and developing new uses of gypsum. During the year just past more progress has been made in this branch of the company's business than in any previous period.

"Our fireproofing department, in which is manufactured plaster partition blocks, has installed in 130 fireproof buildings the entire partition work, and through the excellence of the finished walls and the unusual expedition possible through the use of our system, has secured the unqualified endorsement of architect, owner, and contractor.

"This work has been done in the most prominent buildings in more than sixty cities, and the amount of material supplied by your company may be perhaps more easily understood by explaining that the



THOMAS J. BEST, MEDICINE LODGE, KAN.

year's output, if shipped at one time, would make up a train over three and one-half miles long.

"The progress in the sale of plaster board is equally encouraging, and this fireproof, soundproof and nonconducting substitute for wood lath has made great gains during 1907.

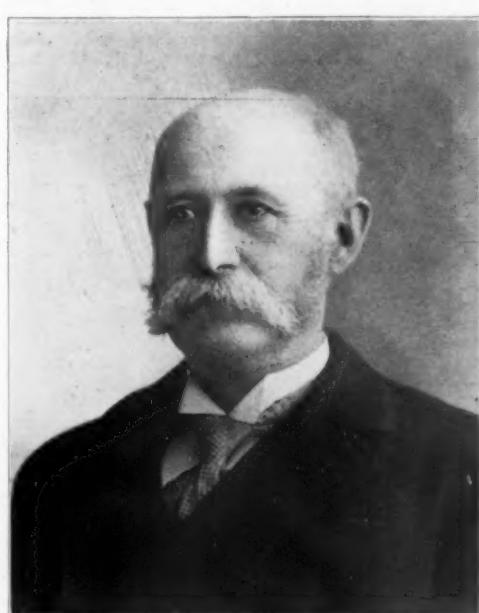
"Your company recently secured the exclusive manufacturing and sales rights of the gypsum studding patents. The steady increase in demand for fireproofing in all classes of buildings promises well for this department and warrants the necessarily heavy expenditures coincident with introduction and establishment."

An Authority on Keene's Cement.

Thos. J. Best, the head of the Best Brothers Keene's Cement Company, occupies a unique position as being perhaps the best posted man in the United States with regard to the manufacture of Keene's cement, that indispensable gypsum product, which up to within a very few years ago had been considered exclusively an imported commodity. Mr. Best has entire charge of the manufacturing end of the concern, whose general offices are located at Cleveland, O. He resides near the mills and quarries at Medicine Lodge, Kan., and is the connecting link that gives quality, by his knowledge of the product and its manufacture, to the goods which are rapidly becoming famous throughout the length and breadth of the land. He has a very wide experience, having manufactured Keene's cement both in England and America continuously for the past thirty-five years. He is to the manner born and was raised in the business, for his father for years was connected with the Robinson Company Keene's cement plant in England, whose goods have been imported into this country as the standard for a long time. In speaking of the product of the Best Brothers Keene's Cement Company, he says: "We are now manufacturing at the mills and quarries at Medicine Lodge the highest grade of Keene's cement that has ever been offered upon the market, and the uniformly standard grade that the splendid raw materials make possible is the guarantee to the user of this Keene's cement that they can get the habit of using better material than they could ever secure before this company was organized."

Elastic Pulp Plaster.

The Toledo Pulp Plaster Company, Toledo, O., are a very busy concern for this season of the year. A recent call at their office had every indication that their business has not fallen off with the "hard times." This concern makes the genuine elastic pulp plaster, the best and cheapest wall plaster on the market. Their plaster gives the best of satisfaction and is well adapted for the home, flat or public buildings. It is without a doubt one of the best hard plasters extant and unsurpassed for adhesiveness, durability and waterproof and fireproof qualities. The Toledo Pulp Plaster Company are sending the trade their fourth (April) series of 1908 calendars. These calendars are issued each month and are very artistic.



JOSEPH J. VAN NOTE, NEW YORK.



The Jaite Company.

The Jaite Company, manufacturers of paper and paper bags of every description, located twenty miles south of Cleveland, at Boston, Summit County, Ohio, was incorporated September 18, 1905, with a capital stock of \$300,000, \$225,000 paid in.

Immediately upon the formation of this company ground was broken for what is today ranked among the largest plants of its kind in the country. The buildings throughout are constructed of cement and are absolutely fireproof. The manufactured product of this company consists of paper and paper bags, for cement, plaster, lime and gypsum, as well as flour and feed bags. Few companies, if any, are so fortunate in the possession of many natural resources as the Jaite Mills. They have an abundant supply of pure, fresh water; in fact, the plant is practically surrounded by water, and it may be drawn from any one of four sources, the Cuyahoga River, Erie Canal, artesian wells and Brandywine Brook. Natural gas wells have been sunk on the company's ground.

The mill is located on the B. & O. Railroad, with ample switching facilities, and three tracks are in close proximity to the building for loading and unloading purposes. The old Ohio and Lake Erie Canal is now being dredged by the State, and traffic will be resumed between Cleveland and the South within the very near future. The Jaite Company will build boats, which will be power-driven. These will ply between their plant and Cleveland, making direct connections with boats on the Great Lakes or with railroads entering Cleveland.

Water from the well is as clear as a crystal and is at 58 degrees Fahrenheit the year round. The well is 400 feet deep and will flow 25 feet above the surface, so that water will easily reach the second story. The well is 500 feet from the plant, and from this point the water is conducted to the mill through an 8-inch pipe, from which a supply of 500,000 gallons a day is drawn.

The factory proper is two stories, the boiler and engine rooms being one story, and another division of the plant, in which the bleaching is done, is three stories. The plant is made of concrete blocks 3 feet long, 12 inches high, and varying in width from 12 to 16 inches. For the concrete the sand was obtained from the bed of the Cuyahoga River, and the cement used was from the mills of the Buckeye Portland Cement Company, Bellefontaine, Ohio, the Atlas Portland Cement Company, Pittsburgh, Pa., and the Pennsylvania Cement Company, New York, some fifty cars being used for the construction of the complete plant.

Through the kindness of E. W. Jaite, secretary of the company, a representative of ROCK PRODUCTS was shown through the entire plant, which is certainly very interesting to one who has not the knowledge of paper and bag making. By the north building, a siding runs the full length, with openings at intervals in the building for the unloading of the raw material, which includes in the most manila rope, which is purchased from all over the country. This is stored in a building two stories 60 by 163 feet, this building also containing the bleach and chemicals. From the store-room the product passes to the cutters, which cut the rope junk into fine pieces, running it through a duster to remove the dust and foreign matter. From this it passes into a solution of lime and soda ash to loosen the rosin compound contained in the rope, so that it may be easily removed after cooking in the washing process.

PLANT OF THE JAITE COMPANY, BOSTON, OHIO.

It then passes into beaters, where the pulp is washed until it is perfectly pure. In these beaters 1,500,000 gallons of water are used every day. There are eight beaters in this room and ample space for as many more. In these beaters it is bleached to any color desired for the paper, which mixes it thoroughly, reducing the pulp to a finely divided state or to the fineness required for the weight and quality of paper. At this period the pulp is run into storage tanks, where it is continually agitated, containing a uniform mixture. Pumps draw the supply of pulp from the tanks and furnish it to the combination cylinder and Fourdrinier paper machine, which has a capacity of 10,000 pounds per day. In this machine the pulp is diluted to the proper consistency and is distributed on a felt which carries it over a series of rolls. The speed of the felt and the rate of flow of pulp upon it determine the thickness of paper stock made. After traveling some distance on the felt, during which time a large part of the moisture is taken from the pulp, the sheet is still carried on to other rolls, which by means of steam inside dry it and again press it to give the paper a smooth and finished surface. Passage through these rolls is up and down, back and forth, a dozen to twenty times, according to the grade of stock to be made, and finally at the end of the paper machine a continuous strip of paper is wound into a great roll, which is delivered to the bag-making department.

For flour sacks the paper is coated and made ready to receive the brand of the miller. The body of the sack is first made; then it is passed to the printing department, after which it is returned to the bottom folding machine, thus making a complete bag. They are then bundled and made ready for shipment. Bags for cement, plaster, lime and gypsum go through much the same process, but are not bleached or coated, retaining their natural drab color.

Throughout the process, and at the end of the paper machine, where the drying and finishing takes place, the pulp is handled wet, and steam is applied so that the air is hot and damp, and particularly where the beaters and rotary cookers are at work the conditions are extremely trying on any kind of machinery and buildings. The floor on this account is made of 5-inch board on edge, covered over with a 1-inch layer of maple wood, and as a means of preservation all woodwork in the factory is soaked with carbolineum.

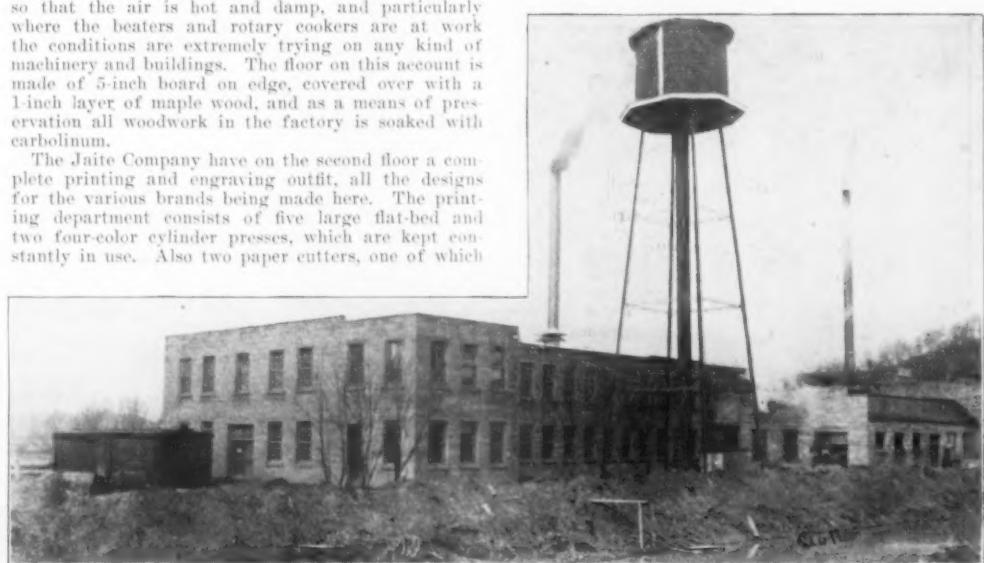
The Jaite Company have on the second floor a complete printing and engraving outfit, all the designs for the various brands being made here. The printing department consists of five large flat-bed and two four-color cylinder presses, which are kept constantly in use. Also two paper cutters, one of which

will cut ten rolls at a time any desired length and up to 80 inches wide.

The company has installed a 600-horsepower steam engine of the Corliss tandem compound condensing type; also two 200-horsepower Stirling water tube boilers. These are to be used for emergency purposes, thus giving ample power either by the gas or steam engine. Natural gas of rich quality, containing over 1,000 B. t. u. per cubic foot, is obtained from gas wells. There are five of these wells, and gas is conveyed by individual 2-inch pipes to a central point 400 feet distant from the mill. From here a 5-inch line conducts the gas to the engine-room, where it passes through regulators and is reduced to one-inch water pressure before it is delivered to a storage tank of 250 cubic feet capacity. From this tank each engine is supplied with gas through an 8-inch pipe. The company have their own electric plant, which is very complete and up-to-date. A water-sprinkling system is installed throughout the factory, water being supplied for this purpose from a 30,000-gallon tank and one 1,000-gallon Buffalo steam fire pump.

In the manufacture of paper considerable steam is required, and the building must also be heated, although in this case, on account of the thick concrete walls and the air space through the center of the blocks, the building is exceptionally warm and requires but little steam. Two Erie City Iron Works tubular boilers, 260-horsepower each, supply this heat.

The management and officers of the Jaite Company have been in the manufacture of paper and bags for years and are well known to the trade. C. H. Jaite, president of the company, was formerly with the Cleveland-Akron Bag Company and the Cleveland Paper Company; also president of the Standard Bag and Paper Company, Cleveland, O. The other officers are: Vice-president, Robert Jaite; secretary, E. W. Jaite; treasurer, Julius Kreckel.



ANOTHER VIEW OF THE JAITE COMPANY'S PLANT.

for the Retailer

The National Builders' Supply Association

Meets Semi-Annually.

OFFICERS:

Gordon Willis, St. Louis..... President
Harry W. Classen, Baltimore..... Treasurer
Harry S. West, Spitzer Bldg., Toledo..... Corresponding Secretary
James W. Wardrop, Pittsburgh..... Executive Secretary

VICE-PRESIDENTS:

Arkansas.....	Charles E. Taylor, Little Rock
California.....	C. J. Waterhouse, San Francisco
Delaware.....	Charles Bye, Wilmington
District of Columbia.....	S. D. Lincoln, Washington
Georgia.....	V. H. Kriegshaber, Atlanta
Illinois.....	H. C. Irwin, Springfield
Iowa.....	R. Hay, Dubuque
Indiana.....	H. B. Lyman, Lafayette
Kentucky.....	Marion M. Allen, Newport
Louisiana.....	W. F. Jahncke, New Orleans
Maryland.....	J. J. Kelly, Baltimore
Massachusetts.....	James A. Davis, Boston
Michigan.....	S. J. Vail, Detroit
Missouri.....	C. S. W. Cobb, St. Louis
Minnesota.....	John Wharry, St. Paul
New Jersey.....	A. Tomkins, Newark
New York.....	M. A. Reed, Buffalo
Ohio.....	Frank Hunter, Columbus
Pennsylvania.....	Cyrus Borgner, Philadelphia
Rhode Island.....	C. M. Kelly, Providence
South Carolina.....	A. G. Gower, Greenville
Tennessee.....	J. C. Lovelace, Memphis
West Virginia.....	R. W. Marshall, Wheeling
Wisconsin.....	R. C. Brown, Oshkosh

EXECUTIVE COMMITTEE:

Gordon Willis, Chairman; Frank S. Wright, Chicago; John A. Kling, Cleveland; Charles Warner, Wilmington; J. C. Adams, Pittsburgh; Richard Kind, Toledo; James G. Lincoln, Boston.

Official Organ, ROCK PRODUCTS.

The National Builders' Supply Association.

If anybody imagines that the National Builders' Supply Association went home from the convention at Chicago to sleep, they've got another "guess coming," for the inspiration of that convention sent every officer, every vice-president and every member home more determined than ever to increase the membership, the influence and the usefulness of the association.

It is putting it mildly to say that all the officers are working overtime. President Willis at St. Louis is in the saddle and directing the campaign. Secretary West at Toledo is pushing the work like an old "war horse," and reports material results during the month. The executive secretary has taken to the work like children take to the "cakes that mother makes," and the vice-presidents and members are doing valiant service in their respective fields. There seems to be a "get up and get" spirit everywhere, interest is increasing, willingness to work is apparent on every side, and the keynote, "Cooperation," is the slogan.

In a recent letter to ROCK PRODUCTS, James W. Wardrop, the new executive secretary, says: "Since the convention every active member, every honorary member, and about 1,500 prospective members have been addressed in an introductory way prior to a personal visit from some officer or member. A dozen organizations have presented words of cheer and encouragement, and many of them offer cooperation along all possible lines. Surely, with the confidence so widespread, this year should be a record-breaker. Correspondence is pouring in by every mail and covers the following cities: Detroit, New York, Philadelphia, Indianapolis, Milwaukee, St. Louis, Manistique (Mich.), Pittsburgh, Boston, Youngstown (O.), Fort Dodge (Ia.), Grand Rapids, Washington, Chicago, Wilmington, Ironton (O.), Maxwell (Ia.), Columbus (O.), Iola (Kan.), Minneapolis, Bay City (Mich.), Springfield (Mass.), Brazil (Ind.), Port Clinton (O.), Little Rock (Ark.), Cincinnati, Eau Claire (Wis.), New Orleans, Jackson (Mich.), Mooresville (Ind.), Duluth (Minn.), Des Moines (Ia.), Baltimore, Nashville, Akron (O.), St. Joseph (Mo.), Braddock (Pa.), Buffalo, Aurora (Ill.), and Toledo. From some of these cities we have half a dozen or more inquiries from as many dealers; surely the 'fields are white' and the harvest promising. All that is needed is that every individual member make it his particular business to 'join the reapers' and gather them in."

"If we can succeed in having our own members realize that the dealers like to be invited to join the association by a fellow dealer, and that every dealer enrolled will conserve the best interests of each member and the association as a whole, I am quite sure that we can double our membership before the next convention. Many of the members realize this and are working hard for the common cause. Others will no doubt follow, and the association will be a greater force for good and be of more value to every dealer in the country. That means promotion and protection, and there never was a time when the dealer needed both more than at the present time."

The executive secretary has planned a personal visit to the New England States, New York City, Jersey City, Newark, Trenton (N. J.), Philadelphia, Wilmington (Del.) and Baltimore for March 25 to April 14, and earnestly hopes to interest the dealers in this section in the National Association. Reports will be submitted to the executive committee at the April meeting, when all new applications will be considered. Of these there are already a number waiting attention.

Memphis Builders' Exchange.

MEMPHIS, TENN., March 10.—At the ninth annual election of the Memphis Builders' Exchange, W. W. Fischer, of the Fischer Lime and Cement Company, was elected president. The annual banquet has been deferred until the exchange is comfortably in possession of its new headquarters in the Goodwyn Institute, when a big celebration is planned. The membership of the exchange numbers nearly two hundred and comprises practically all the building contractors, structural engineers, architects and supply interests doing business in the Memphis market. Bonding and fire insurance companies were admitted by their local representatives at the last meeting, which was held February 4.

Mr. Fischer, the newly elected president, is a young man, full of pluck and enterprise, and he believes in the business boom idea of cooperation of all the building interests of the community in which he does business, as evidenced by the following open letter published in *The Forum*, the organ of the exchange:

A PLEA FOR CO-OPERATION.

In taking up the duties of my office as president of the Builders' Exchange, I am deeply impressed with a sense of their importance, especially in view of the critical period of our work that has been brought about by the recent large increase in membership. A new field of development and usefulness has opened before the Builders' Exchange of Memphis, and much depends upon the wise direction of its activities just at this time.

In the beginning of our year's work, I desire to impress upon all of our members the need of hearty cooperation in order to accomplish what we have undertaken, and to make the Builders' Exchange the influential business organization it should be. We are now merging from the somewhat obscure development stage of our existence into a prominence and possible usefulness, second to no business or commercial body of the city, and it needs only the enthusiastic cooperation of our present large membership to successfully execute almost any plan or secure any good to the trade and the public that we may undertake.

As to the way in which each member may cooperate, I would say, first, be loyal to the Exchange. Never lose an opportunity to speak a good word for it, or give it a boost. Loyalty and praise count for more than anything else in many cases, and have accomplished wonders in upbuilding organizations and cities. If anything goes wrong, or a fellow member has not treated you just right, don't knock the Exchange, but let the matter take its proper course before the arbitration committee; or, if possible, overlook a few things for the good of the order. No organization can live and prosper if every man stands on his dignity and yields nothing to anybody. Let us learn to give way to our neighbor as far as consistent—then take proper steps for redress. Boost the Exchange.

In the next place, every member should consider himself a member of the Campaign Club, until every available firm and individual of Memphis connected with the building industry and eligible for membership joins the Builders' Exchange. Two hundred members for 1908 was our watchword a few weeks ago, but no limit has been placed, and we should go above that number. Every good member adds to the strength and influence of the Exchange, and increases the interest to its members. We should as well have three hundred as well as two hundred members, so let us raise the mark and see what one year can accomplish.

In the third place, I would suggest regular attendance at the rooms, especially on the occasion of the stated meetings, and as far as possible every day. In our new quarters in the Goodwyn Institute our floor space will be ample to accommodate a daily meeting of two hundred, and our present membership includes more than that number of individuals and representatives of firms. A daily informal meeting from eleven to one o'clock would create a social tie, as well as business benefits, that would be well worth any inconvenience it might cost the members. We hope to establish this feature to a marked degree before the end of the year.

The question of dealing with one another has been freely discussed in the Exchange, and, of course, is a most practical form of cooperation. We hope to make substantial advances in this matter during the present year, and this will be made easy if all the reliable members of the trade are enrolled as members of the Exchange. If you want to deal with a concern that does not belong to the Exchange, the best solution will be to get their application for membership. There are many questions of this kind that will reach a satisfactory adjustment if the members of the Exchange will adopt the plan of hearty cooperation.

Another thing that I would insist on is, that if any member has a suggestion or idea that would be of benefit to the development of our work, it should be brought to the attention of the Exchange, and, if practicable, made use of. The officers and directors may overlook some important need or interest of some member or branch of the trade, which could be brought to their attention, and used to the advantage of many. Let every member make himself responsible to study the development of the work, and feel free to offer suggestions for the general good.

The Builders' Exchange will be this year what you help to make it; and you will get out of it just about what you put in, in the way of real, enthusiastic cooperation. A great work is before us, and we need the help of all. As your president, and also speaking for the other officers and the board of directors, we are at your service to do the best we can; but that best will not accomplish what needs to be done without your cooperation.

A little over two years ago Mr. Fischer organized the Fischer Lime and Cement Company, having for several years previous been connected with the supply trade, which gave him a wide acquaintance with the contractors as well as the building public. From the first his efforts were crowned with success. He is the distributor of Kasper's Portland cement and handles a full line of supplies. Last year he built a large warehouse for the accommodation of his growing business.

The Builders' Exchange of Memphis is to be congratulated upon selecting a hustler for its president. There is sure to be something doing with Fischer in the lead.

The Noble Cement Mill.

We desire to call our readers' attention to the ad of the Noble Concrete Machinery Company which appears in this issue. This company makes a mill for pulverizing cement that has become lumpy from any cause, and although they have been on the market only a year, the machine is now being used in almost every State in the Union. There is economy in using a Noble mill, inasmuch as it makes cement soft and fluffy like sifted flour. Every particle of cement is pulverized, causing it to blend with the water, thereby completely coating every grain of sand, causing the aggregate to firmly bond into a solid mass. If you are interested in making artistic, sound concrete, use a Noble machine.

Newly Incorporated.

New York.—Akron Building Company; capital, \$1,000. Directors: L. S. King, A. M. Bing, S. A. Herzog.

Chicago.—Marnane Farley Company; capital, \$12,000; to deal in building materials, contracting, etc. Incorporators: J. D. Marnane, P. J. Farley, C. J. Marnane.

Minneapolis, Minn.—John B. Harker & Co., dealers in builders' supplies; capital, \$20,000. Incorporators: John B. Harker, George Havenstein and B. M. Parker.

Stinson & Dickensheets have been incorporated at Gloucester City, N. J., to deal in stone, brick, lumber and hardware; capital, \$50,000. George W. Dickensheets, Richard J. Hoffner, Jr., Charles A. Hope, Gloucester City, N. J.

The City Coal and Cement Company, of Columbus, Ohio, capital \$10,000, was incorporated March 11 by R. H. Kissinger, E. C. and E. R. Kissinger, Joe H. Santee and John W. Sidler. The concern will conduct a retail coal and builders' supply business at Good and Kerr Streets.

The New Jersey Building and Realty Company have been incorporated at Kearney, N. J.; builders, contractors, real estate, etc.; capital, \$50,000. Archibald Salmond, No. 21 Prospect Place; James Salmond, Jr., No. 76 Prospect Place; James F. Scrimshaw, No. 76 Bennett Avenue, all of Arlington N. J.

Trenton, N. J.—Stinson & Dukensheets, Inc., Gloucester; capital, \$100,000. Incorporators: George W. Dukensheets, Richard L. Hoffner, Jr., and Charles A. Hope. The company is to deal in building materials.

Albany, N. Y.—Cameron & Hawn; capital, \$100,000; to deal in real estate, building, building material. Incorporators: Edward M. Cameron, Orra G. Hawn, Frederick W. Cameron.

Building Prospects Bright.

BELOIT, WIS., March 16.—Prospects for a big building season were never brighter in this city than they are at this time, according to the contractors. Several stores and apartment-houses are being projected; also several smaller houses. One contractor said he didn't think he ever had seen a season when there was so much laid out ahead of him as there is this spring. A general feeling prevails here that the recent scare in the financial market was only temporary and that conditions will have resumed their normal aspect by the time the carpenters are done working this fall.

NEW JERSEY DEALERS.

The Fourth Annual Convention at Newark Marked by Interest and Enthusiasm.

NEWARK, N. J., March 13.—One of the most enthusiastic and successful meetings of the Mason Material Dealers' Association of New Jersey was the fourth annual convention held at L. Achtelstetter's on March 12. From the beginning of the executive session, which convened at one o'clock, until after the vaudeville performance which concluded the day's program, perfect harmony prevailed throughout the entire attendance. The forceful promotion of the policy of the association, contained in the few words, "Sell to dealers only," met with expressions of genuine approval from the manufacturers and wholesalers present, and a spirit of reciprocity was manifested on the part of the retailers forming the active membership. The general feeling was that much good has resulted from the earnest efforts of the association in behalf of better business conditions and that through its efficient officers, who have the hearty cooperation of both active and associate membership, the influence of the association will continue to grow stronger and more powerful.

THE EXECUTIVE SESSION.

The executive session was called to order by President Walter C. Shultz, of Hoboken, shortly after one o'clock. Secretary James M. Reilly of Newark called the roll. Quite a number of members who failed to respond to their names at this time added their presence later, so that the room was well filled before the close of the session.

The report of Treasurer Horace P. Cook of Newark showed the association to be in excellent financial condition with a substantial cash balance to its credit in the bank.

The annual address of President Shultz followed as the next feature of the program.

PRESIDENT'S ADDRESS.

There are many ways in which this association may be of benefit to its members. Some of them have already been felt, and others are still to be developed. Those who have noted the changes in trade conditions in the last few years must see that there has been a great improvement from the dealer's point of view. Not only is there less interference from manufacturers, but some of the large dealers who could have taken many orders from the local men have kept out of their territory. They have even refused to quote prices, but have instead referred to the dealer covering the territory from which the inquiries were received.

Your customers have also been protected from contractors who have attempted to pose as material dealers and so get the advantage that the wholesale price would give them to underbid builders who are your customers. Local men have come together to discuss and act on matters that required their united efforts—and a better understanding.

Few if any of them would care to go back to their former way of doing business and to even think the hard things of each other that seemed so real to them. Being together and knowing each other has not only made them friends, but it has so strengthened their position that they can together successfully overcome many conditions that could not be met alone.

By cooperating with other organizations the Masons' Material Dealers have done their share to bring about changes that seemed desirable, such as new item law and more liberal car service regulations.

There is a better understanding between manufacturers and dealers to-day than there has ever been before. Many of the former who did business directly with the consumer have not only changed their own policy, but have done a great deal to influence other manufacturers to sell entirely through the dealers. They have taken a hearty interest in our association and have shown their approval in a way that is very gratifying. This leads us to our list of associate members. It may not be very long. In fact, it is not nearly long enough; but if you can make out a list of manufacturers (and have it as long as you like) that will compare with it in quality I would like very much to see it, for you will find that some of the oldest, largest, most reliable and best manufacturers are with us.

Until now our work has been largely of a preparatory nature, but now the time has come to act. It has taken time to work up to this condition, but we have with us now a number of prominent manufacturers who are doing more for us than we have asked them to do. They are sufficient to supply every dealer in the State with first-class material of every kind required—with brands that have a reputation that cannot be questioned—and they have the capacity to fill all our orders. Why should they not have them, if the manufacturers with whom we are now dealing will not work with us, and show us where they stand by becoming members? If you do not want manufacturers to compete with you by selling direct, the remedy is in your hands. The board has done its part by laying a strong foundation for you to build on.

No doubt you have all heard the receipt for cooking a hare. It begins: "First catch him." That is a very important part of the receipt and the foundation for a good dinner, but the rabbit might not enjoy it. This evening we will have our associate members with us for dinner; but I hope that their position will in no way resemble that of the rabbit. We do not want to get them into hot water.

Instead, we want them to share in the benefits of this association—or which they are a very important part—as well as to help carry its burdens. They have made our interest theirs; now let us make their interests ours, and after studying their position make it possible for them to have an opportunity to work with us without letting manufacturers who are not associated with us get away with any of their trade.

In conclusion I would say: If there is an occasional sale by a manufacturer in your territory, do not take that fact as conclusive evidence that the association is doing no good for you. It takes time and work to accomplish anything worth while. We are going slowly and aiming at permanent improvements in trade customs that are bound to benefit you; but the change must be brought about gradually. It would be unfair to ask a manufacturer to drop customers without giving him a chance to have them supplied with his goods in another way.

Mr. Shultz's address was greeted by generous applause, after which Secretary Reilly presented, on behalf of the board of trustees, their fourth annual report, which follows:

REPORT OF THE BOARD OF TRUSTEES.

BY JAMES M. REILLY.

In submitting this report it occurs to your board of trustees that the one question to be answered is, have we made progress in advancing the work of our association for the protection of the trade interests of members, and has this protection conferred benefit and profit?

Before answering, let us consider some of the conditions which existed prior to this organization being

and this protest was taken up by the Board of Trustees, formulated, and laid before the various cement manufacturers.

It was presented in the form of resolutions, letters and petitions; it was made the subject of discussion with the Association of American Portland Cement Manufacturers, the Manufacturers of Clay Pipe, Wall Plaster, Lime and other products.

It is our firm belief that conditions in the trade have improved in many respects, and have returned not only a direct benefit but a financial profit to every one engaged in the mason material business in this State.

It seems to your Board that the manufacturer or wholesaler who now solicits orders from consumers is an exception, rather than the rule, and direct evidence, satisfactory to your Board, shows that this change is largely due to our work as a body.

What was proposed in our constitution was in the nature of a radical departure from established rules, and when we asked concerns operating under large capital, with vast interests at stake, to change their method, it is not to be wondered at that they did not make immediate response, nor is it to be considered a weakness on the part of our association that with all the effort that has been made, some of these large concerns still insist upon conducting their business along the old lines.

On the contrary, we consider the progress made most satisfactory, for the reason that several of the companies who at first absolutely refused even to give our petitions consideration are now practically running their sales department under these very rules, by selling to dealers only.

In all our discussion regarding the cement situation it has been considered the best policy to continue the work of the association along educational lines, through appeal and argument to the judgment of the various officers of the cement companies, and the action of many of these companies is demonstrating the wisdom of such a course.

One of the strongest proofs that can be offered as to the success of our work is in the additions made to our list of associate members during the year. Among those listed are some of the largest and strongest manufacturers in their several lines, and we may believe that in making application for membership it was done only after a careful study of our methods, and a belief that the association is working along proper lines for the best interests of all connected with the trade.

How shall we reciprocate for this practical demonstration of friendship to those who have taken up associate membership with us?

Two years ago the association adopted the following resolution:

"Resolved, That the members of this association shall in the purchase of materials give preference to all manufacturers and wholesalers who have become associate members of this association."

How shall we individually discharge this obligation? It has been claimed by some of the associate cement members that on account of indifference on the part of members they are losing trade in trying to live up to the obligation which they have assumed, which obligation provides that an open market shall maintain in all parts of the State for the sale of cement, provided the manufacturer quotes a price to the consumer 10 cents per barrel higher than the price quoted to the local dealer, and that such manufacturer will endeavor to arrange with a local dealer for the delivery of the order.

This claim is based upon the fact that their competitors who have not taken up associate membership are not obligated and do not consider the rights of the retailer when a chance to take an order offers, and that they are handicapped in feeling obliged to quote a price which will allow the payment of the discount to the dealer.

As practical men, we must recognize that this condition does exist, and we must also recognize that unless we can return in trade value, such an arrangement cannot be maintained; therefore we should realize the necessity of making a special effort to encourage the support of those manufacturers who are co-operating with us.

It is gratifying to note that the dealers in Hudson County have encouraged one of our associates by telling him to go in and get the order by practically extending all the privileges of the market to him in competition against other manufacturers on a large order.

If we can reciprocate along business lines, we will not only continue to help those who have become associated with us, but such a dealer is bound to attract and bring in others until eventually the trouble in the cement trade will be overcome and business conserved to the legitimate dealer.

It is gratifying to report that the manufacturers of plaster and plaster board are co-operating in protecting the trade interests of the retailer.

In reference to the sale of pipe to large contracts for State and municipal work, the association placed itself in communication with manufacturers and received assurances which would indicate a willingness on the part of all manufacturers to sell through dealers only.

Another of our associates suggested that it would be wise policy to try to force the pipe manufacturers to sell only through dealers in the matter of large contract jobs until the association is in position to do an injustice to those manufacturers who are willing to support the local dealers—a point which your Boards think is well worth the consideration of all members.

To cite a few instances where our associate members have given the best kind of proof of their support and co-operation, we would call attention to one case where the manufacturer, failing to interest the local dealer in his material, actually delivered the material necessary by truck to fill the contract, and allowed the local dealer the full profit for the mere booking of the order, which was delivered to one of his best customers, who insisted upon having a certain material which the yard dealer did not carry.

In another case a contractor went direct to the manufacturer with his wagons for the material and endeavored to place an order, but was refused and referred back to the dealer, and in a third case another associate took a chance of losing a large sale by insisting that the contractor should place the order direct with the retail dealer at the point where the building was to be constructed.

One of our members in a letter writes that he talks association to every man that calls at his office to sell material; most of them are told that "we do not buy from them because they are not associate members" and further suggests that if all the active members would do the same, it would soon show good results by an increase of associates, and in time put a stop to just such sales.



WALTER C. SHULTZ, HOBOKEN, N. J.
President Mason Material Dealers' Association of New Jersey.

formed, and also the general rules under which it was agreed necessary reform could be effected, and a code of rules adopted to regulate in trade usage.

It was provided in our constitution that no rules, regulations or by-laws should be imposed which would in any manner restrict competition, limit production, or regulate prices, keeping well within the law in purpose as well as in intent.

No promise or agreement of any kind has been required in the taking out of membership, and it was agreed that an open market would have to be maintained, whereby every manufacturer and wholesaler would have a just right to secure the sale and use of their several products.

You will realize that with the adoption of these broad general rules to govern the Board of Trustees were called upon to exercise wise judgment and to adopt a policy of conciliation, through which the manufacturer and the wholesaler would appreciate that it was not our endeavor to impose impossible conditions, but that we were striving to effect an understanding which would conserve to the local dealer whatever profit was right and just in supplying the consumer, without causing any financial loss or in any way interfering with the widest possible use of cement or other material.

The conditions which obtained when this organization was formed were such that many of the largest dealers considered the handling of certain materials unprofitable owing to the competition complained against.

It was decided to combine the influence of dealers into a solid organization, through which the evil of such a competition could be demonstrated, and by moral influence effect an understanding in the trade which would eliminate this competition, and bring about an understanding under which the trade of the consumer would be conserved to the retailer, and at the same time an open market be maintained for the manufacturer and wholesaler.

To accomplish such a result it was agreed to adopt as the principle, that the trade of the consumer belonged to the retailer; that it was unfair for the manufacturer or wholesaler to solicit and sell to the retailer and then go out and sell to his customers.

In becoming a member of the Association every yard dealer registered a protest against such a competition,

In regard to the membership, it is a pleasure to report that we have added during the year eight active members and sixteen associate members, making the total number now on our roll ninety-six active members and thirty-five associate members.

In arranging today's program for discussion, your Trustees have thought best to invite a free expression on the following subjects:

"Trade Customs, from the Manufacturers' and Retailers' Viewpoint." If nothing else will come out of a discussion of this question, we believe a better understanding will be arrived at.

"Giving Preference to Associate Members in Placing Orders." This subject is one on which we have freely expressed our judgment in the foregoing report, and we believe that every member present should voice his opinion in such a way as to encourage those who have taken up associate membership, and perhaps influence others to do likewise.

We have selected for discussion the question, "How Shall Cement Block Manufacturers Be Classified?" because it is necessary for the association to define its position in order to avoid friction, and we are hopeful that the result of today's discussion will enable us to arrive at some satisfactory conclusion.

Another question which we have been asked to determine is: "What Shall Constitute Wholesale Orders?" This also we expect can be agreed upon at today's meeting.

In concluding our report we urge every member to continue their support, to give preference to our associate members, all things being equal, and to insist upon those with whom you place orders becoming associate members, or to put themselves on record with the association.

We would also urge that every member exert his greatest influence with the members of Assembly and Senators from their counties to secure the passage at this session of the Legislature of two bills introduced, amendments to the Lien Law, known as Assembly Bills Nos. 225 and 226, which have been approved and endorsed by the State Lumbermen's Association, and which can be read at our meeting today and discussed if necessary.

The report, which plainly shows the wonderful growth and success of the organization since its inception, was enthusiastically applauded.

THE ELECTION OF OFFICERS.

The report of the committee on nominations, which was signed by Horace F. Osborn and William C. Salmon, was next presented. The report suggested the reelection of the present staff of officers with the exception of three new names on the board of trustees, these three new members to fill terms of three years each. Upon motion the secretary was instructed to cast one ballot for the association, and this resulted in the election of the following officers: President, Walter C. Shultz, Hoboken; vice-presidents, Charles Agnew, Paterson, and J. C. Richardson, Trenton; treasurer, Horace P. Cook, Newark; secretary, James M. Reilly, Newark; Advisory Board, Charles W. Ennis, Morristown, and George W. Tompkins, Newark. Board of Trustees: Henry N. Sayre, Newark; James P. Hall, Jersey City; J. M. Campbell, Passaic; Uriah F. Washburn, Jersey City; T. M. Brewster, Ridgefield Park; George A. Smock, Asbury Park; Willis Pearson, East Orange; M. P. Stephens, Summit; E. L. R. Cadmus, Bloomfield; Ambrose Tompkins, Newark; Daniel Edwards, Long Branch; Selah Schoonmaker, Somerville; George W. Horre, Elizabeth; M. F. Ellis, Basking Ridge; W. C. Salmon, Boonton; J. D. Loizeaux, Plainfield; Horace S. Osborne, Upper Montclair; Amos C. Bolton, Perth Amboy.

Open discussion was indulged in at some length on the revision of the New Jersey lien laws and the secretary read the proposed bills. It was finally moved that every member of the association use his best influence to secure the passage of the proposed laws.

At this point the meeting adjourned for a recess of ten minutes, during which time an informal reception was in progress and many of the dealers and manufacturers had an opportunity to renew friendships and increase their acquaintanceship.

THE OPEN SESSION.

When the president called the association to order for the open session of the convention, every available space in the large hall was occupied, while many unable to secure seats remained patiently standing through the entire session, which lasted from 3 to 5 o'clock. In his address to the association at this time President Shultz said: "It is said that half the trouble in the world is caused through misunderstandings. Now today I hope that we are going to lighten the world's burden by understanding each other better. To fully understand we must see things from each other's point of view, and the gentlemen who will speak to us here will help us to do so, I am sure. To our associate members I want to say that their ideas will be heartily welcomed, for we want them to have all the benefit from the association that it can give them, and we do not want them to lose any trade that belongs to them."

TRADE CUSTOMS DISCUSSED.

The first subject for discussion was "Trade Customs from the Manufacturer's and Wholesaler's Viewpoint," and the first man to address the meeting upon this topic was A. F. Gerstell, of the Alpha Portland Cement Company. He began his address by apologizing for his lack of oratorical ability, but the enthusiasm which greeted his short speech plainly showed that his explanation was by no means in order. He spoke enthusiastically of the progress of the association work and the wonderful opportunities for future success. He said that such meetings as this, where retailer and wholesaler can meet, were productive of a better understanding, more pleasant relationship, and of great good for both. He called attention to the wonderful growth of the cement industry, which he prophesied would soon become the greatest trade in the country. He sought perfect harmony between retailers and manufacturers of cement, and said that the manufacturer could not increase the use of cement so extensively as could the dealer who was equipped with every facility for reaching the consumer. The speaker commended the work of the association in the promotion of its policy and said that ultimately all business would be placed on a better foundation through such efforts. In conclusion, Mr. Gerstell suggested a plan which he believed would lead to more intimate cooperation between retailers and manufacturers, and this plan consisted in the election of an official from the body of retailers who would receive complaints and negotiate with the manufacturers' associations, who in turn would elect a representative from their bodies to confer with the material dealers' associations.

At the close of his speech Mr. Gerstell was greeted with applause, and Mr. Charles Warner of Wilmington, Del., was called on to address the meeting.

Mr. Warner's speech was attentively listened to. He said that it was not right to regard the policy,



JAMES M. REILLY, NEWARK, N. J.
Secretary of the Mason Material Dealers' Association of New Jersey.

to "sell to dealers only," simply as a protection to the dealers, as the adoption of such a plan would also be of invaluable benefit to manufacturers and wholesalers. "All," he said, "are in the same box, and what works good for one will benefit the other. It is impossible for manufacturers to become acquainted with the local conditions in every community, and they must look to the retailer as the one equipped with knowledge of the local situation, the consumers and their responsibility." He made an exception of railroad companies in the policy of the association, but no other, and he asserted that the problem was a comparatively simple one from this point of view. Commenting on the results of association work in general, Mr. Warner said that greater progress had been made in association work during the past six or eight years than in the entire previous history of the world. He urged harmonious relations between retailers and manufacturers and called harmony an invaluable business asset, which did more good than any amount of dictatorial action. He believed that such harmonious relationship was the best argument the association could use to influence the manufacturers to the adoption of the policies of the association and said that the time was coming when those manufacturers who refused would be only courting trouble and adding gray hairs to their heads. Concluding his remarks Mr. Warner solicited reciprocity on the part of the retail dealers and asserted that it was not fair for the dealers in any community to arbitrarily place a ban on any manufacturer's product or refuse to buy his goods when

they are desired by the consumer. The address was generously applauded.

Mr. Jones of the Dexter Portland Cement Company was asked for a talk on the same subject. He responded by congratulating the association upon being the first to suggest that the manufacturers make a difference between prices quoted to consumers and retail dealers. "In this," said Mr. Jones, "lies the solution of the problem, and the following of such a policy can not fail to establish the most amicable business relationship." He asserted that the time would soon come when every manufacturer would recognize the rights of the dealer, and this recognition would be expressed in the matter of price.

Howard P. Green, of the Whitehall Portland Cement Company, was next called on, and said that everyone should get in closer touch with this question; that it was a difficult problem from the manufacturer's viewpoint when times were dull and large plants have to be kept in operation with large forces of men on the payroll. "This is one of the subjects I have studied for years, and I must admit that I have not arrived at a satisfactory solution of the question," said he. "Our company has lived up to the rules and regulations of this association to the best of its ability, and I believe that manufacturers and dealers are going to have a better understanding with each other and in time will satisfactorily solve the entire problem. The business of the manufacturer is to make and advertise a good product, while it is the dealer's part to sell, but the dealer should supply exactly the product that is called for by the consumer."

J. M. Campbell of Passaic next addressed the convention.

TRADE RELATIONS FROM A RETAILER'S VIEWPOINT.

BY J. M. CAMPBELL.

The customs and the requirements of all time have decreed that trade be carried on by three separate and distinct classes of workers: the producer, the distributor, the consumer—each class of equal importance, each class depending upon the others.

While there have been many changes in business methods, no plan has yet been evolved by which the great volume of trade of the business world can be carried on without the cooperation of these three classes.

The great disturbing feature in our business in recent years is the fact that the producer, the class from whom we dealers buy, often sells not only to us, but sells also directly to the consumers, transactions that should only be made through the dealers.

When such sales are made, they are contrary to established custom, contrary to good business methods, and such transactions give to the seller but a temporary advantage. They are unjust to the manufacturers themselves, unjust to the dealers, and unjust to the consumers; injurious to the entire trade because it demoralizes the business.

Retail dealers in builders' supplies are established in every progressive community. Such establishments are demanded, and are an accommodation to the public. They carry in stock a full line of supplies and maintain an equipment for receiving, storing and delivering such materials. Fair prices are usually charged because competition among the retail dealers keep the margin of profit down to a small figure.

Sales by the manufacturer to the consumer are unfair to the manufacturers themselves because they surely tend to keep prices down. It is unfair also to those manufacturers who try to do business with dealers only. Also take notice, manufacturers: When a new customer is caught in one hand by such sales, many old and better customers are likely to get away from the other hand. Also, selling direct does not increase the consumption of any material.

When such sales are made it is wrong to the retail dealers located where the deliveries are made, because those dealers are a part of the social, public and business life of such communities, and for the privilege of doing business there (earning a living and accommodating the public) they help to pay, by taxes and assessments, the cost of the local government, and, as a right, the business should only be handled by these men.

During the past few months, conventions of building supply men have been held all over this country, and it is amazing how the association movement is growing. It means that the conditions which we object to obtain in other places, and it means that earnest men all over this country are banding themselves together to remedy the evil.

Business is not being done under the principle of "live and let live." I have given considerable thought to the subject and have come to the conclusion that if these conditions continue, the dealers will be equally at fault with the manufacturers, for I now believe that most of the manufacturers would prefer to sell to dealers only, and they are putting it up to us to show them how it can be done. I believe, however, that the obligation is equally upon them to show how, and that they should unite with the dealers to bring about the change. I believe that with proper organization we dealers can obtain any business plan that is based upon right and justice.

We have a power in the building material men of all sections of our country which, if working together in effective organization, would not be exceeded in influence and strength even by an organization composed of the manufacturing interests. Individuals cannot influence manufacturers to a change of policy because singly they are weak and the manufacturers strong.

We believe that membership in trade associations should not in any way act as a restraint of trade. Also it should not limit the scope of endeavor, nor act as a handicap upon business capacity or ambition to go ahead. We believe that, whether an association member or not, the man with ambition, ability and capacity for work will meet with greater success than the man or firm who waits for business to come to him.

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CHICAGO, March 19.—A few days of spring weather have caused the building contractors and others to realize that time will soon come when they will be busy again. Already several buildings have been started, and before long, in the opinion of the building fraternity, things will be humming. The supply people have not much stock on hand and are buying very closely. When operations open up some of them will be caught short. Several good-sized projects and some smaller building work are on hand, and builders are not much worried over conditions. One of the large supply men said that he knew of three jobs that would be let in the next thirty days which alone would require 500,000 barrels of cement. There is still a large amount of railroad work going on in the city, and the indications are for a good year in paving, as strenuous efforts are being made to get the city officials to let a large amount of the proposed work.

Interest has again been stirred up in building circles by the announcement of the Chicago and Northwestern Railway that work on the new depot would proceed as soon as the buildings occupying the present site are demolished.

Huehl & Schmid, 163 Randolph Street, are the engineers and architects for a reinforced concrete building at La Salle Avenue and Ohio Street. Vulcanite cement is being used, and a Smith mixer is employed to mix the concrete, which is elevated to the upper floor by means of a Thomas elevator. The exterior is of vitrified brick with stone trimmings.

J. P. & J. W. O'Connor, Security Building, have the general contract for the Armory Building on Wentworth Avenue, near Thirty-fifth Street. They have been at work now about a month. The foundations are of concrete, the walls are of brick, and the work is progressing rapidly.

Cement Men Optimistic.

Frank Wright, of Meacham & Wright, who are the largest distributors of cement in Chicago and in close touch with the trade, says that they are not the least bit worried over the cement business this year in Chicago. "There are just as many large projects now in hand as there were this time last year," said Mr. Wright. "There is as much money in the country, and there is every indication that building will be good."

C. H. Wood, sales manager of the Wolverine Portland Cement Company, says that they find orders coming from the country trade in just as large quantities as they did this time last year. Discussing trade conditions, Mr. Wood said that business in the small towns is much better than it is in such cities as Chicago.

Price, to some people, is the all-important question in the buying of cement. It is also the greatest argument that some men have for selling it. Speaking of this, one of the sales agents said: "I would rather sell less cement than load our mill up with orders for cheap-priced cement. It is better to keep the raw materials and not run the machinery than to sell at cost. Then there is the man who takes orders at close prices and when there is an advance in the market boosts the price up fifteen or twenty cents. The orders that he can get at the advanced price will be given the preference in shipping while the man who got in on the low price waits. I believe in taking care of my customers, making as prompt shipments as possible, and advising them when the market is about to advance so that they can place any orders they may want. There is a good deal of satisfaction in it. It lessens one's worries."

Thomas Magiff, Western sales agent of the Atlas Portland Cement Company, reports that orders for cement are beginning to come in in good shape. The low stocks the dealers have is one of the reasons, and he believes that when the weather allows building to proceed the usual activity will again prevail.

Among the Crushed-Stone Operators.

Now that navigation on the river is open the crushed-stone operators are beginning to replenish the store of crushed stone at the distributing yards. Principal among the companies who have plants along the river in the Joliet district are the Illinois Stone Company and the Western Stone Company. All the stone is brought to the city in wagon boxes on barges. Some empty these boxes; others, by means of a derrick, lift the boxes onto the trucks of their wagons. All the yards are located on the river at distributing points convenient to all parts of the city.

The Markle Lime and Stone Company, composed of Huntington, Ind., men, will erect a crushed-stone plant at Markle, Ind. Eben Lesh is head of the concern. They have purchased a complete outfit from the Austin Manufacturing Company. It will be equipped with one No. 7½ and one No. 5 Austin crusher, elevator, screens, hoists and quarry cars.

George W. Jackson & Co., Inc.—the big contractors who have the contract for building the water tunnel under the lake—are obliged to tunnel through rock. They are removing it by blasting and conveying to an outlet at Grand Crossing. They have accumulated a large amount of rock and are putting in a crusher. They will use the crushed-stone for the concrete in the tunnel. They figure that when they have completed this work they will have about 75,000 or 100,000 yards of crushed stone left over, which they will dispose of to other contractors.

The Granite Manufacturing Company, who have a granite quarry at Marble Falls, Tex., have the contract for the construction of a large dam near that place. They have put in a No. 4 Austin crusher for the purpose of crushing the granite for concrete work.

Patrick McGovern, contractor at Montreal, Canada, has a large municipal contract which will require crushed stone and concrete. He has purchased from the Austin Manufacturing Company a complete No. 5 crushing plant to do the crushing work.

The National Mortar and Supply Company of Pittsburgh are getting their lime plant at Gibsonburg, Ohio, into operation and are now making preparations to install a crushed stone plant to take care of the spills from the quarry. They have purchased a complete No. 5 plant from the Power and Mining Machinery Company and expect to have it in operation by the first of May.

Dolese & Shepherd have been supplying the greater part of the crushed stone and screenings for the concrete work at Gary, Ind., the "city of cement." In a large amount of the concrete used in construction work as well as that for sidewalks, gutters, curbing, etc., the aggregate is composed of crushed stone and screenings. The demand for screenings has been so great that the supply of all the crushing plants in this vicinity has been exhausted. The demand still continues, and Dolese & Shepherd, to care for this trade, have installed something novel for a crushing plant. One set of 36x16 Superior rolls has been put in. It will crush the 1½-inch stone to half-inch and smaller. The rolls have a capacity of 45 yards per day.

The Bueyrus Company of Milwaukee, Wis., has the contract for a stone crushing plant for the Holan Stone Company at Maple Grove, Ohio. The equipment will consist of one No. 10 and one No. 5 McCully crusher, two 5-foot screens, two double friction hoists, transmission machinery, etc.

The Illinois Stone Company are changing the screening system at their plant. They have just added another 28x20' screen. This is the only crushing plant in the district that uses a steam shovel. They have a 70-ton shovel to handle their stone.

Sand and Gravel News.

The Columbia Silica Company have put in a sand plant at Portage, Wis., and are just getting into operation. They have a silica of the highest quality and will supply glass factories with their product.

The Illinois Beach Sand and Gravel Company, 100 Washington Street, have equipped a plant on the lake shore just south of Waukegan, Ill. It will have a capacity of 500 yards per day. A centrifugal pump is used to pump the sand and gravel into the plant. It is equipped with elevators, Gillette screens, crushers and a washing outfit. C. M. Avery, of Aurora, Ill., was the engineer who constructed the plant.

The Hotchkiss Concrete Stone Company expect to have their new sand and gravel plant near Warrenville, Ill., complete and in operation by April 1. The Stephans-Adamson Company of Aurora, Ill., designed the plant and are furnishing the materials for construction. It will have a washing device. Speaking of the concrete business, W. S. Hotchkiss said that it is now opening up in good shape, and he thought that it would be good from now on.

The Lake Shore Sand Company are increasing the output of their gravel plant at Cary, Ill. They will install three more crushers, one No. 5, one No. 4 and one No. 3 McCully.

What the Machinery Men Say.

Milton J. Williams, general sales agent of the Williams Patent Crusher and Pulverizer Company, has just returned from an extended trip among the Eastern cement mills. Speaking of conditions there, he says the stocks on hand are very low. His company is getting a good line of business for crushers and grinders.

Sales Manager Moats of the Austin Manufacturing Company says they have placed more orders so far this month than they did in January and February. As a rule they do considerable business during these months, but orders were held back. However, they seem to be coming in now in good shape.

L. J. Hewes, manager of the Chicago office of the Power and Mining Machinery Company, has secured several good orders lately. Hugh Murphy at Denver, Col., has purchased through this office a No. 3 complete crushing plant. Several other large orders for crushing machinery have been closed by this company.

THE WEST COAST.

SAN FRANCISCO, CAL., March 15.—March opened with good prospects for a busy month in building construction, February having made a good record notwithstanding the continued rains. The building permits issued during February numbered 596, with a total estimated valuation of \$2,685,292. The next few months will show a rapid increase if money can be borrowed in sufficient amounts to erect the new structures which are in plan. Oakland also made a very good showing in February, the total valuation being \$729,088. The Los Angeles permits for the same month totaled \$579,163.

The supply of foreign cement stored in warehouses in this city is still very large and the consumption comparatively limited. The market is a little weaker at about \$3 a barrel, ex ship, for Alsen's and down the line to \$2.50 for other foreign cements, according to brands. Very little cement is afloat or loading at European ports for San Francisco. The Santa Cruz Portland Cement Company at Davenport, Cal., is now making about 2,500 barrels of cement daily, and the other California plants are running at a much smaller rate of production. The Pacific Portland Cement Company's plant at Cement, Cal., is running again at a fair rate. Cement and lumber are still very low-priced in this market, but labor is still costly, notwithstanding the fact that thousands of mechanics are out of employment. Carpenters are getting \$4 a day and plumbers \$6. Concrete workers are not in great demand, for comparatively few reinforced concrete buildings are now under construction. An improvement in this line is expected. Reinforced concrete floors are to be placed in many steel frame buildings.

A great deal of work in the line of concrete sidewalks will be required as soon as the rainy season comes to an end. The recent revision of the building laws prohibits the laying of wooden walks. As a sanitary measure an ordinance has also been adopted by the Supervisors requiring the ground space under all buildings to be covered with concrete at least 1½ inches in thickness. All chicken yards, barnyards, etc., in the outlying districts are required to be concreted. All basements and cellars will also have to be cemented so as to be perfectly sanitary and ratproof. The warehouses along the water front are to be made ratproof as soon as possible. The Harbor Commissioners report that the only method that would be perfectly effectual is the construction of concrete piers and steel sheds, which means an expense of several millions of dollars and several years' time. The State legislature would have to authorize this expenditure.

Claus Spreckels has closed a contract with the McPhee Company for the extension of fire wall, building of concrete floors and concrete inclosing wall for cooling tower of his new powerhouse in Stevenson Street, for \$4,130.

C. A. & H. E. Hellwig have closed a contract with the Clarke Construction Company for all work on the three-story and basement reinforced concrete building on the corner of Grant Avenue and Union Square Avenue, for \$23,690.

The San Francisco city authorities are rushing preparations for placing the streets in good condition as far as possible before the arrival of the battleship squadron from the Atlantic Coast about the end of April. To this end the San Francisco Board of Supervisors resolved that the specification for the construction of a municipal asphalt plant for the City and County of San Francisco prepared by the Board of Public Works be adopted and the Board of Public Works was empowered to enter into a contract for the construction of such plant, and the purchase of steam rollers, appurtenances

and wagons. The sum of \$12,500 has been appropriated for the construction of the plant. An appropriation of \$45,000 has been made to be expended on sewer repairs and construction. Much concrete work will be required in this connection.

The Holmes Lime Lands Consolidated has been incorporated in San Francisco with a capital stock of \$1,000,000 by W. W. Dennis, G. A. Pauli, Joseph Odgers, A. F. Pauli and R. S. Moyle. The Holmes Lime Company, with offices in the Mutual Savings Bank Building, is interested.

The Roswell Cement and Plaster Company is putting in a cement factory one mile south of Santa Fe, N. M. T. W. Milsey of Chicago is president of the company and F. C. Smith manager. J. D. Hamlin of Farwell, Tex., and A. L. W. Nelson of Roswell are stockholders.

Plans for a rock-crushing plant have been completed by the Pierce County Commissioners at Tacoma, Wash. According to specifications an Austin gyratory crusher will be installed, with a 45-foot elevator and storage bunker for 150 cubic yards capacity.

Portland, Ore., may soon own municipal rock-crushers to prepare material for the improvement of the streets, for the ways and means committee of the City Council has recommended an appropriation of \$25,000 to install rock-crushers. The City Council of Eureka, Cal., is considering the purchase of a rock-crushing plant at a cost of from \$4,000 to \$10,000.

It is reported from Eureka, Cal., that Isaac Minor, who owns a granite quarry at Warren Creek, contemplates installing a rock-crusher at his rock quarry.

The City Council at St. John, Ore., has a committee investigating the advisability of purchasing and operating a rock-crusher for the town, to provide material for proposed street improvements.

The National Gypsum Company, a corporation formed by Salt Lake City capitalists to work the gypsum deposits near Salina, Utah, has made final arrangements to begin operation. A. G. Burritt, a well-known mining man, has been made manager. The mill to be built at Salina will have an initial capacity of 100 tons a day, but will be provided with sufficient power for 500 tons.

Advices from Carson, Nev., say that the U. S. Gypsum Company has purchased the Adams property at Empire, Nev., and will erect a new manufacturing plant.

Shasta County, Cal., will soon be provided with a system of concrete pipe manufacture that will entirely do away with lumber in the construction of road culverts and small bridges. Supervisor Fred Hurst is having built at the Redding Iron Works a set of molds for concrete pipes. These will be in three sizes, for 18 to 24-inch inside diameter. The pipe will be made with a mixture of one part cement to five parts of gravel. The cost per running foot will be cheaper than lumber at present prices of materials. Each pipe-molding machine will weigh in the neighborhood of 300 pounds, and its parts can be easily handled by one man. It is expected within a short time to have Shasta County's culverts all of concrete and in such shape that they will never rot out or become broken. The idea came from Germany, where Mr. Hurst's brother, August Hurst, secured models for the machines and shipped them to Redding.

R. R. Christie, president of the Long Beach Asbestos Mining and Manufacturing Company, has been in Sacramento in company with A. R. Sprague, for the purpose of interesting Sacramento capitalists in the project of establishing a plant there for the manufacture of the various asbestos products now being produced at the Long Beach factory. The company has possession of three gypsum deposits near Towles Station in Placer County.

It is expected that street work to be carried on in Sacramento during this year will necessitate the use of about 165,000 tons of crushed rock. From now on this rock may be supplied by a crusher located at Dredge, where there is plenty of material for road-building, if it is properly worked up, that does not have to be blasted. Mayor White and City Engineer Randle visited Dredge recently and were favorably impressed with the plant and the rock it furnishes. The plant has a capacity of about 15 carloads daily. The city will want about 5,500 carloads for the year.

The Rarentos Tile and Cement company has been incorporated in San Francisco with a capital stock of \$10,000 by Adeline Moore, A. and E., Rarentos.

The Pacific Rock and Gravel Company has been incorporated in Los Angeles, with a capital stock of \$100,000.

Frank L. Brown and other representatives of the San Juan Portland Cement Company recently made an inspection of the partially completed plant in the cañon near San Juan, Cal. One of the officials

stated that the San Juan Portland Cement Company had plenty of money to go ahead with the works and complete it on short notice, but that it would be a foolish move on their part to pay out from \$75,000 to \$100,000 for labor at this time, owing to uncertainty as to the supply of power.

The city of San Francisco has filed another suit to perpetually enjoin the Gray Bros' Crushed Rock Company from blasting away Telegraph Hill. This work has been in progress for many years, and in spite of all previous efforts to save this landmark a large portion of the hill has found its way into the crushed-rock bunkers at its base.

Mrs. Giles has awarded a contract to a local builder for a one-story concrete building, 75x75, fronting on Seventh Street in Sanger.

CLEVELAND AND NORTHERN OHIO.

CLEVELAND, O., March 18.—With every indication of an early spring building is reviving again in this city, and before another month rolls by it is believed that it will be in full swing again. Contrary to general expectations the banks have not loosened up on their money, and some trouble is yet being experienced in floating loans to carry on the larger projects, many of which are all ready to go ahead except for the mere incidental of ready cash. The erection of many public buildings here, however, will help the situation, even if there should be a continued delay in private operations.

A movement which has been set afoot by the horrible Collinwood disaster is the fireproofing of the schools of Cleveland. The city will spend \$450,000 immediately to fireproof the staircases, enclose engine-rooms and otherwise remodel old schools in Cleveland. It is planned to spend \$1,500,000 on new fireproof buildings just as soon as the bonds can be issued. The deplorable accident in which 170 innocent children lost their lives has been directly traced to poor construction and lack of fireproofing. Since it occurred the effect has been very marked, and has been noticed at the Building Inspector's office in the changing of construction in many buildings.

At a meeting of the Ohio State Builders' Exchange during the past month resolutions were passed calling upon the public to go ahead with their building projects this year so that advantage may be taken of lower prices. John R. Squire of Youngstown was again made president and A. E. Roberts of the Cleveland Builders' Exchange was re-elected secretary.

The cement market has shown considerable strength during the past month, and prices are quoted at firmer figures. Portland is selling at from \$1.60 to \$1.65 a barrel, with slightly lower prices for large orders. Natural and slag cements have not changed much in price, the slag selling for \$1.15 and the natural for 80 cents.

Hunkin Bros. of Cleveland have been awarded the contract for two new concrete buildings to be erected on the city's farm at Warrensville, which are to cost together \$52,000. One will be known as the south dormitory and dining-hall and will cost \$35,000, while the other is a dormitory for aged people, which will cost \$17,000. These two structures will be gone on with at once and are only a part of a gigantic scheme of concrete fireproof hospital, infirmary and prison buildings which will be erected as money becomes available.

A number of Cleveland supply houses and contractors are figuring on getting in on the work of building the new courthouse for Mahoning County at Youngstown. The general contract has been let to Caldwell & Drake of Columbus, Ind., who will sublet some of the work. Over \$1,000,000 will be spent on the building. The main structural material will be granite.

A six-story triangular building containing six stories on the ground floor is to be erected at the intersection of Euclid Avenue and Huron Road by the Carey Construction Company. Steel for reinforcing has already been delivered upon the ground. The Euclid frontage will be 125 feet, while there will be a frontage of 135 feet on Huron Road. Reinforced concrete will be used throughout.

Architects White & Shupe, Schofield Building, this city, have been commissioned to prepare plans for a mammoth new fireproof plant for the Morgan Lithograph Company of this city. The present building of the company is on the group plan site and will be removed. An effort is to be made to get the building under way within a few weeks.

The school in which occurred the fatal fire in Collinwood is a mass of ruins, only the bare walls standing. The School Board has commissioned Scarles, Hirsch & Gaving, architects of this city, to proceed with the preparation of plans for a new \$70,000 fireproof concrete school building. Work

on the plans is being rushed, and bids will be asked in a few weeks. The building will be two stories high, with an auditorium on the ground floor. The building will contain twelve or fourteen class-rooms.

The transfer of the plant of the Eggers Brick Company, which failed some weeks ago, has been made on a foreclosure from the company to the State Banking and Trust Company. The consideration was \$28,000. The plant covers thirty-seven acres of ground. Nothing like the real value of the plant is represented in the price allowed by the bank.

Work has been resumed by the Carey Construction Company on the new reinforced concrete dock for the Cleveland Furnace Company. This is to be 1,000 feet in length, and if tests prove successful, as it is thought they will, several thousand feet more is to be built. The dock was started late last summer, when a few hundred feet was built. Up to the present it has stood all tests.

During the past month fire of an unknown origin gutted the plant of the Louisville Brick and Tile Company at Canton, O. Workmen and farmers formed a bucket brigade and did their best to save the buildings. A loss of \$25,000 was entailed. The plant, which operates fourteen kilns, will be rebuilt at once.

Superintendent Bradbury of the Cleveland sidewalk department has announced that twenty miles of walk are to be laid in this city this season. Most of this will be of cement, wood being barred. Some flagging from neighboring quarries will be employed. The contract system is followed at present. Mr. Bradbury thinks the legislature should give the city the right to do the work by direct labor.

Paving operations have already begun here. Lower Superior Avenue has been torn up for several weeks where tracks are being relocated. More than a hundred street jobs are having preliminary work done on them. The County Commissioners have received bids on the paving of the Cleveland-Wooster pike, which will cost about \$97,000. Many other county roads will also be paved this year, which will help to redeem the situation.

Radical action has been taken by the Cleveland City Council to provide for the fireproofing of new structures and for the remodeling of public buildings not already considered safe. An ordinance has been presented providing for important changes to the building code. One of the most important of these is the appointment of inspectors to represent the city when concrete buildings are being erected. On every building of any size an inspector will be present continuously.

THE TWIN CITIES.

MINNEAPOLIS, MINN., March 17.—The spring building season is developing fairly well. There is a general feeling among owners and investors that prices on brick, stone, lime and cement must go lower still, and they are inclined to hold off in consequence. This is holding back considerable work which had been planned for this season, but which will hardly be started until a reaction sets in. The open shop is a question at issue in the minds of the general contractors of the larger cities of the Northwest, particularly of the Twin Cities. In Duluth the contractors have been up against the proposition and are now in the midst of a contest in which they seized the opportunity to force the issue. In Duluth the contractors profess to be well satisfied with conditions, and believe that all concerned are doing better than was possible under the closed shop rule, which was rigidly in force there for a long time. In the Twin Cities the general contractors and the sub-contractors and material men are carefully considering the proposition. Many of them are in favor of it, but are doubtful as to their ability to carry it through at this time.

The Twin City Brick Company has made many improvements in its display rooms in the Manhattan Building in St. Paul.

At the recent annual convention of the Minnesota Society of Engineers and Surveyors, in Minneapolis, one of the topics discussed was "District Highways and Concrete Masonry Construction as Pertaining to Good Roads."

Minneapolis building permits for February amounted to \$356,000, a gain of nearly \$100,000 over the \$258,000 for February of 1907.

St. Paul building permits in February slumped, the total being \$167,000, as against \$349,000 for the same month a year ago.

Karl A. Koerner, a prominent general contractor of St. Paul, died Feb. 29, aged 58 years. He retired from active work last September. A widow and three grown children survive him.

The builders of Fargo, N. D., have declared for the open shop from March 1, with the exception

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of the painters, with whom an agreement exists until April 1.

The Minnesota Supreme Court has held that in a case against a contractor for personal injuries, where there was no eyewitness to the accident, the trial court did not err in directing a verdict for the defendant contractor.

George W. Orff, formerly a practicing architect in Minneapolis, died recently at his home in Bangor, Me., aged 72. Mr. Orff was not associated with the architectural profession in Minneapolis of late years, but had served as building inspector of the city of Minneapolis, and afterwards as superintendent of construction upon the East High School and a number of graded schools. He left the city about three years ago, to make his home in Maine.

The Builders' Exchange of St. Paul has recently issued a guide book and directory of members which is most complete, and shows evidences of great care in its preparation.

G. E. Ingersoll, the St. Paul representative for the Smith concrete mixer and other machines, has moved his office to the Pioneer-Press building.

NEW ORLEANS.

NEW ORLEANS, La., March 18.—This is truly the concrete age, and in no city is this form of construction gaining favor faster than here. In the early part of this decade the use of concrete had almost gone out of use as a structural material. It had been used in early times, but brick and stone were until recently the principal materials used, especially for handsome residences and for business houses. Then came the slow-burning construction, but if there was ever a bonfire of pine boxes that could go up in smoke any faster than the "slow-burning" structures it was a different brand of pine than comes to this market. It was possibly two years ago that concrete began making headway, and now there is not a bit of paving, sewerage, sub-draining or building going on but has more or less concrete in its construction. The concrete foundation is almost universal. Now, too, there are cellars and basements under the business buildings just as one would find in New York, Chicago or any of the large cities. The difficulties encountered are far greater, for here is found the soft, seepy land underlaid by a body of quicksand that has to be overcome. This is sometimes done by pine piling with a foundation resting on these of concrete or waterproofing.

In some instances monolith buildings are constructed, and in others the steel frame is reinforced with concrete, or, rather, the concrete is reinforced with the steel structure, with concrete floors overlaid with tile or marble in the handsomer buildings. Where concrete is not used entirely it is faced with brick, terra cotta and marble, but the structure is all the more durable for having the concrete either partially or as a whole.

Cyrus Johnson, one of the most gifted architects of the South, has given up his profession and allied himself with F. Codman Ford, a material dealer. Mr. Johnson thinks he can serve his country better and gain more satisfaction from his art by seeing to it that his brother architects have the material they designate for their buildings.

Mr. Ford says the cement trade is good. He handles the Universal Portland. He has lately been awarded some good contracts and has bids on several of the new buildings.

F. Codman Ford has the contract for furnishing the cement for the Richardson Memorial, 1,200 barrels.

The American sugar refinery at Chalmette will use possibly 1,500 barrels. Bids are being asked for the furnishing of the concrete materials.

The Virginia Bridge Company has the contract for erecting the big steel grandstand and offices for the New Orleans Baseball Association. The foundations will be of concrete.

St. Joseph's School at Ramsay, La., was burned recently, and it has been decided to replace it with a fireproof building of brick and concrete. The students will make their own brick and will do their own reinforced concrete work. It will require five or six carloads of cement.

The City Hall annex, which is to be built by the Jefferson Construction Company, will be a fireproof building and will need a great deal of cement. Just the amount has not been given yet, but Mr. Ford is to furnish all the material.

It would seem that the financial east wind that has been blowing since last October does not have any effect on the building operations in Louisiana. Million-dollar buildings, \$100,000 buildings are going up on all sides. Such small affairs as a \$25,000 residence or business house are scarcely thought worth while talking of, and the material men speak of them as little jobs. The men who furnish cement are having a busy time of it.

F. Codman Ford is furnishing the cement for the concrete for the sea wall that is being built at Fort St. Philip, below the city.

J. Watts Kearney is furnishing Contractor Glover with Dexter cement for the foundation work of the Monteleon Hotel.

The Ferro Concrete Construction Company has the contract for the construction of the foundations of the Audubon Hotel. The Carolina Portland Cement Company is to furnish the cement.

Edward W. De Knight, president of the Hydrox Felt and Engineering Company of New York, is here to establish an agency for their waterproofing materials.

The Hollow Concrete Block Manufacturing Company is doing some good work. Several commodious residences are being erected of blocks turned out in this factory. The Pettyjohn system is used. Not only is this concern furnishing blocks for dwellings, but it is turning its attention also to tombs and it has one church in course of erection.

The reinforced work on the New Orleans Terminal Company's ship slips and docks and elevators at Chalmette is progressing with favorable rapidity.

All building operations are active here despite the croakers' cry of hard times.

LOUISVILLE.

LOUISVILLE, Ky., March 18.—Prospects continue to brighten in building lines. Labor and materials are both cheaper, and there is enough work being figured now to give many of the concrete operators something to do when the contracts are let. The sewers are giving considerable outlet for concrete work, and many new contracts will be let all through the year.

The Kosmos Portland Cement Company say that they have been operating full force during the past month, and that the indications favor a very satisfactory year.

J. B. Speed & Co. say that the indications for both cement and lime are brighter than they were a month ago, and that they will soon begin operating their mill on full time.

The Louisville Cement Company find the prospects more encouraging, and they are well pleased with the outlook.

The National Concrete Construction Company say that they are working a large force.

The Concrete Block Company have recently completed a nice block residence and have other work in prospect that will give them all they can do.

The Central Concrete Construction Company say that they are fairly busy and are getting things in shape for a good year.

The Southern Roofing and Paving Company are quite busy on roofing contracts, but have not yet begun actively in their concrete branch. They have considerable work ahead.

George Williams of the Crescent Cement Company, Charlestown, Ind., was in the city several days ago. He has some new ideas in concrete construction that he hopes to place on the market soon.

The National Roofing and Supply Company find indications more favorable and believe prospects are encouraging for the concrete industry.

The E. H. Troxell Company say they are figuring on considerable work.

The Ohio River Sand Company find some improvement in the general business outlook, though they are not as busy as usual at this time of the year.

The Nugent Sand Company say prospects are very hopeful.

The Louisville Fire Brick Works note an improvement in the demand. They are not operating on full time as yet, but they are steadily increasing their output.

Samuel F. Troxell & Co. are keeping quite busy, and expect to continue so for some time.

The Southern Brick and Tile Company are resuming operations after being shut down for some time.

The Kentucky Vitrified Brick Company say that indications are very fair.

The Louisville Pottery Company are not operating on full time, but report indications more favorable.

The Bannon Sewer Pipe Company expect that by the beginning of the next month they will have about all they can look after.

The Burrell & Walker Clay Manufacturing Company find the demand somewhat slow, though they hope for an early improvement.

The Kentucky Wall Plaster Company report a good demand, and are looking for an increase as the weather improves.

The Atlas Wall Plaster Company are preparing to install some additional machinery and change their motive power from gas to electricity. They will add another mixer shortly.

MEMPHIS AND THE SOUTHWEST.

MEMPHIS, Tenn., March 17.—The first month of spring finds a nice revival of business with the concrete and builders' supply firms of Memphis and vicinity. The weather is fine and business conditions have picked up until even in a presidential year they look almost as good as in the "flush times." It is hardly expected that building will be on as large a scale as last year, but with the steady growth of Memphis this is regarded as anything but impossible. A large amount of municipal work will be done and several notable private undertakings are in sight.

The Cubbins Lime and Cement Company, in the northern part of the city, report a healthy March business. They have extended their supply depots to different parts of the city and are carrying cement, tiling, lime and specialties, not only for the Memphis trade, but for the surrounding country. They look for April and May to surpass March from a trade standpoint.

The Memphis Mosaic Tile Company, 391 Main Street, are working on several residences and one or two public buildings now. They will be interested in some definite jobs now being planned by local architects. They do floor, wall and ceiling work in mosaics, ceramic, terrazzo and tiling.

The Union Sand and Material Company, Tennessee Trust Building, find that the sand trade in Memphis is picking up. They are also doing a good business in cement. They handle the Red Ring Portland brand.

Steve Wright, of the Wright Lime and Cement Company, believes 1908 will see before its close some signal development in concrete work in Memphis. Mr. Wright is one of the local pioneers in artificial stone work. His business in builders' material is running along as usual, and he looks for more active business when spring is further along.

The City Council of Memphis has awarded the contract for gravel for the ensuing year to the Decatur Gravel Company of Decatur County, Tenn. There were several competitors for the contract.

Joseph H. Peter & Co. of Nashville will install a plant for the manufacture of artificial stone.

The First National Bank of Etowah, Tenn., is preparing to erect a new home of concrete blocks.

John Grenade of McKenzie, Tenn., contemplates erecting a cement block home in that town. Mr. Grenade has made a good many blocks along with his other cement and brick work there.

The street improvement bonds of Gulfport, Miss., to the value of \$125,000, have been sold to John Nuveen of Chicago. Much of this will go toward paving work.

The St. Joseph Cement Block and Burial Vault Company of St. Joseph, Mo., has been incorporated with a capital stock of \$20,000. The incorporators are: A. O. Ozenberger, W. H. Jones and J. S. Ozenberger.

County Commissioners of Ellis County, Texas, are experimenting with the use of concrete for building culverts on the public roads. They have recently built a concrete culvert near Midlothian and will build another on the Waxahachie-Ennis road near Reager Springs. A. N. Thomas, one of the commissioners, observes that, while they cost more than those made of timber, they will not have to be rebuilt, and there's the difference.

SYRACUSE, N. Y.

SYRACUSE, N. Y., March 18.—The prospect for building in the spring is much better. While the market is still dull, there are a number of things in prospect which will cause considerable activity. The city of Syracuse will let a large number of sidewalks this season, and bids have already been submitted for about 20,000 feet around schoolhouses. The New York Central and Hudson River Railroad is building a new tunnel under the Erie Canal, which, it is expected, will be one of the most notable pieces of cement construction work in this section. A large cement aqueduct is also being constructed under the Erie Canal at Onondaga Creek. The cement market is practically the same as it was a month ago, and there is little activity.

Hill & Van Wagner are preparing for a busy season in sidewalk and cement block construction work.

C. J. Sullivan has been making cement blocks with the Ideal process all winter. One of the notable pieces of work which he is engaged on is a cement block silo for Daniel Overacre, which will be the first one of its kind in this vicinity. It is to be 30 feet high and 18 feet in diameter. The blocks will be waterproofed inside and out.

Builders and contractors have been served with notice of a new ordinance governing permits to

build. Applications for permits must be accompanied by a sworn statement showing the ownership and location, estimated cost and name of contractor, the affidavit to be made by the owner or his agent or architect. False statements will be punished as perjury.

C. J. Smith and Dawson Bros. have been awarded contracts for the first of a group of buildings to be erected by the Paragon Plaster Company. The exterior will be laid up with concrete blocks, and it will be of slow-burning mill construction. The plans for a large mill clay shed and boiler and engine-house will be ready soon. The cost of the new buildings will be about \$30,000. The company is operating its brick and concrete plants to full capacity.

Nelson T. Sholes, former manager of the Adamant Plaster Company, died in this city recently, having been asphyxiated by illuminating gas. Mr. Sholes was manager of the Adamant Company and was a heavy loser when it failed.

The Supervisors of Onondaga County investigated the stone crushing plant of the Onondaga Penitentiary and have decided that the small output of stone is due to the weakness of the boilers. Repairs will probably be made and a bucket line will be erected from the quarries across a ravine to the crushing plant.

The National Wall Plaster Company has elected the following officers: President, C. S. Averill; vice-president, Daniel O'Brien; secretary and treasurer, Harvey E. Dingley; directors, the officers together with H. H. Lincoln, R. R. Stuart, C. R. Walker and G. E. Baldwin.

The Sanborn Granite Company has elected the following directors: George W. Sanborn of Utica, Cora H. Sanborn of Utica, Fred H. Webb, M. Burton Coe and Joseph C. Sanborn of Syracuse.

The New York Brick and Paving Company has elected the following directors: W. B. Cogswell, Jacob Amos, E. M. Klock, Sr., James L. Breed, Chester H. King, E. J. Page and T. J. Leach. The officers elected were: President, Mr. Cogswell; vice-president, Mr. Amos; secretary, Mr. Klock; treasurer and general manager, Mr. Breed.

At the annual meeting of the stockholders of the Utica Cut Stone Company at Utica the following directors were elected: F. T. Proctor, George M. Weaver, George M. Weaver, Jr., J. T. A. Doolittle and A. B. Wing.

The stockholders of the Paragon Plaster Company have reduced the number of directors from five to three and the following were elected: Jacob Amos, A. E. Nettleton and W. K. Squier. The officers are: President, Mr. Amos; vice-president, Mr. Nettleton, and secretary-treasurer and general manager, Mr. Squier.

PITTSBURG AND VICINITY.

PITTSBURG, March 19.—Although there are few contracts of more than ordinary importance being handed down at the present time, the outlook is considered bright. The retrenchment policy in force for the past year will probably give way to a great extent before the necessity for improvements, in which cement and concrete construction will prove an important factor, and contractors in this line who have work on hand are rushing it to the extreme limit in order that they may be in shape to take on their share of the new work.

Although money is not as plentiful as it was six months or a year ago, there is sufficient to conduct business along firm lines. The cement companies having local offices are generally complaining about the scarcity of orders. Many of their best customers have cut orders in half. The retail concerns have come to the conclusion that there is little use in carrying large and expensive stocks for which there will probably be little demand before March or April.

The contract for the cement blocks for three high-class residences to be started this spring at Bellwood, Pa., have been awarded to M. R. Glasgow of that city. Mr. Glasgow has recently completed a modern block plant, the first of the kind in that vicinity. There has been an excellent demand for concrete blocks in Bellwood and vicinity, but these have heretofore been shipped from Altoona.

It has been decided by the County Commissioners to make a number of important changes in the course of the Scioto River through and in the vicinity of Kenton, O. J. C. Poling, County Engineer, with headquarters at Kenton, has prepared the plans and specifications and will take bids about the first of April. The improvements will include much cement and concrete construction, including retaining walls and concrete abutments for several new bridges.

The street paving contracts at Monessen, Pa., have finally been awarded, going to Thomas

Sweeney & Co., Pittsburgh, and Bowman Bros., McKeesport, Pa. The Sweeney contract amounts to about \$50,000 and the Bowman contract to about \$25,000. Brick, laid on three inches of gravel concrete, will be used.

The contract for the concrete retaining wall to be built in the spring by the Board of Public Service of Akron, O., along Hickory Street, has been awarded to George W. Crisp & Son of that city. The wall will contain several thousand yards of concrete.

The contract for the construction of a large steel and concrete manufacturing plant at Paden City, W. Va., for the Pittsburgh Chain and Forge Company, Pittsburgh, has been given to the Schlieper Engineering Company, also of Pittsburgh.

McLaughlin & McLaughlin, Pittsburgh, have been awarded several additional contracts for sidewalk paving in the East End, in all of which concrete will be used exclusively. The combined contracts cover about 3,000 lineal feet of five-foot walk, as well as the concrete curbing.

Thomas Hill, Bellefontaine, O., will construct this spring the remainder of the 30-inch concrete sewer to complete the system started last fall at Lancaster, O. It is probable that contracts for several additional sections of concrete sewer at the same place will be awarded late in the spring or early in the summer.

Duncan & Porter, 310 Morgan Street, North Side, Pittsburgh, are replenishing the stocks of cement, sand and other builders' supplies that have been allowed to run rather low during the winter, and the yards and warehouses of the firm present a busy aspect. The firm look for a good season. They report the demand for cement and sand to be as heavy as at this time last year.

The Houston Bros. Company are likewise very busy, delivering as much building material as last year, while the number of new inquiries now is greater.

The Pitt Construction Company, Fulton Building, Pittsburgh, have a \$67,000 contract for State road construction, work on which will be started within the next month or so—a five-mile stretch of highway from Irwin, Pa., to the Allegheny County boundary, near McKeesport, Pa. The road will be built with a six-inch limestone surface, and will be 18 feet in width. There will be considerable concrete used in retaining walls and bridges along the proposed road, while on the larger bridges concrete will be exclusively used for the piers and abutments.

The stables of the D. J. Kennedy Company at East Liberty, Pittsburgh, were totally destroyed by fire on Saturday morning, March 14, entailing a loss of about \$7,500. About fifty head of horses are kept in these stables, and all had been sent out with the company's wagons but a short time before the fire was discovered. The loss is covered by insurance, and will not interfere with the company's building supply business, which has been particularly heavy during the past two weeks.

The Bay Bridge plant of the Sandusky Portland Cement Company, located about seven miles west of Sandusky, O., was damaged to the extent of about \$20,000 by fire last month. The burned portion is being rebuilt as rapidly as possible.

The Lehigh Portland Cement Company has started the improvements at the No. 2 plant at New Castle, Pa. This plant was built only last summer, and, although it was operated for a couple of months before it was closed down, it was never thoroughly tested and tried out. It is the intention to fully test this plant out before the busy season arrives. The No. 1 plant, also located at New Castle, is in excellent shape, and, although only in partial operation, can be started to capacity on short notice. The company has already booked considerable business in this territory, and both of the plants are practically assured of a busy summer's run. The new plant will be started on full time first, however, in order to see what it can do, and to provide time for improvements should they be necessary.

The American Case and Register Company of Alliance, O., has decided upon the immediate erection of a large reinforced concrete plant at Salem, O. The building will be encased with brick and will cost in the neighborhood of \$25,000.

At the annual meeting of the stockholders of the Johnstown Builders' Supply Company, Johnstown, Pa., a dividend of 6 per cent was declared out of the earnings of the past year, and a handsome sum added to the surplus, a portion of which will be used this year in making improvements and expanding the business, which is already the largest in that part of the State. The company recently purchased the entire business and good will of the R. D. Jones Builders' Supply Company, also of that city. The annual report shows that the year closing December 31, 1907, was the most prosperous

since the formation of the company. The outlook for the coming year in that vicinity is almost as bright.

At the annual meeting of the stockholders of the Sterling Sand Company at Uniontown, Pa., the reports showed that the past year's business was the best in its history. It was decided to make a number of important improvements this year. B. F. Sterling was elected president; W. D. McGinniss, secretary, and J. B. Sterling, treasurer.

The plant of the Chemical Lime Company at Bellefonte, Pa., which has been closed down for some months, has been started again, with every assurance of another busy season ahead.

The Aubrey Lumber Company, Brownsville and Bridgeport, Pa., dealers in lumber, lime, cement, plaster, sand and general builders' supplies, has changed its name to the R. L. Aubrey Lumber Company. The general offices and yards will continue to be operated at Brownsville, and the storage warehouse will be maintained at Bridgeport.

To satisfy an execution in favor of the Second National Bank, Connellsburg, Pa., the entire plant and equipment of the Fayette Sand and Stone Company in Dunbar Township, Fayette County, Pa., will be sold out at public sale at Uniontown, Pa., on Saturday morning, April 4, by Sheriff Peter A. Johns. The plant and quarries are well equipped and in shape to put into immediate operation.

BUFFALO, N. Y.

BUFFALO, N. Y., March 17.—The name of the successful bidder securing the contract for the construction of concrete walls for the ship-lock in Black Rock harbor, Buffalo, will be announced in a few days. The bids for the work were recently opened in the office of United States Engineer Fisk of Buffalo. The successful bidder will have until June 30, 1912, to complete the work. The lock walls will be 817 feet long and 70 feet wide. The lowest bidder was the McArthur Bros. Company, New York, whose bid amounted to \$823,304. The other bids were as follows: Foundation Company, New York, \$993,522.11; T. A. Gillespie Company, New York, \$1,062,309.00; Reed-Coddington Company, Niagara Falls, \$1,238,613; Great Lakes Dredging & Dock Company, Chicago, \$977,039; Buffalo Dredging Company, \$965,321.50. The walls are to be made of concrete, the estimated quantity of which is 74,000 cubic yards.

Green & Wicks, architects, of 110 Franklin Street, Buffalo, have called for bids for the entire work of constructing the manufacturers' and liberal arts building on the State Fair Grounds at Syracuse, N. Y. Sealed proposals will be opened in Syracuse on March 30. The building must be completed on or before August 15.

The Iroquois Portland Cement Company's plant at Caledonia, N. Y., has been sold to George H. Kelly of Cleveland for \$6,000. Referee Hotchkiss of Buffalo confirmed the sale.

The Elmira, N. Y., Cement Products Company has elected the following officers: President, Thomas Milan; vice-president, C. A. Pulford; secretary and treasurer, H. A. Fisk; director for three years, C. A. Pulford; for two years, H. A. Fisk and John M. Connelly. The company has already a number of large contracts.

It is reported that all wooden bridges in Elgin county, Can., will be replaced by concrete and steel structures.

Austin G. Fox of Columbus, O., is arranging for the work of straightening Canaseraga Creek between Mount Morris, N. Y., and Dansville, N. Y., a distance of fifteen miles. The work involves the construction of fifty-two bridges, which are to be built either after the concrete arch pattern or with concrete abutments and iron superstructure.

The village board of trustees of Mount Morris, N. Y., will macadamize a part of Chapel Street in that village and a number of cement walks will be laid.

Lewis Belger has been wrecking the plant of the Akron, N. Y., Cement Works, recently bought by him from Thomas Lockwood of Buffalo. The plant has been idle for four years.

The Foster & Glidden Engineering Company, which will do a general contracting business with a capital stock of \$50,000, has been organized in Buffalo. The directors are Charles B. Foster, J. Perry Clifton and Vern Chapman.

The new sawmill of the Central Pennsylvania Lumber Company in Sheffield, Warren County, Pa., is attracting much attention. It is somewhat of a new departure in the line of a mill for the manufacture of lumber, as the building is constructed entirely of reinforced concrete.

The Engineering and Concrete Construction Company of Hornell, N. Y., has been organized with a capital of \$25,000. The directors are: James L. Costello, Thomas A. Carn and Pierre D. Lewis of Brooklyn.

ROCK PRODUCTS

The State Canal Board at Albany, N. Y., has recently approved the plans for barge canal work involving the expenditure of more than \$7,000,000. The plans are embodied in three contracts as follows: No. 20, dredging the Mohawk River from Rexford Flats to Mindenville, at an estimated cost of \$3,480,000; No. 64, improving the canal at Orleans at an estimated cost of \$3,407,000; No. 45, damming the Oneida River at Caughnay and constructing a lock at Baldwinsville, at an estimated cost of \$425,000.

The value of the buildings begun in Buffalo in February of this year was \$303,000. Last year the total for February was \$381,000.

State Engineer Skene of Albany says there are on the list awaiting construction 97 1/2 miles of proposed highways in New York State. The estimated cost is \$9,692,755.

Thomas Crimmins Contracting Company of New York City has secured contract No. 9 of the barge canal, covering 5 1/2 miles, near Medina, N. Y. The company's bid was \$755,995.

A plan to construct a deep waterway from Tonawanda, N. Y., to Gill Creek is in the hands of the members of the harbor committee of the Board of Trade of Niagara Falls, N. Y.

The bridge over the Erie Canal at the foot of Main Street, Lockport, will be taken down and replaced by a \$125,000 structure.

The M. L. Granger Company of Hornell, N. Y., have secured the contract for the erection of the new Alfred, N. Y., high school. The schoolhouse was designed by Architect Ottis S. Dockstader of Elmira, N. Y. The contract amounts to \$18,786.

The Masonic Building Association is planning to build a Masonic temple in Dunkirk, N. Y., at a cost of \$80,000.

Bishop McQuaid of Rochester, N. Y., is planning to build an infirmary in connection with St. Bernard's Seminary in that city, at a cost of \$10,000.

The members of Niagara River Lodge, I. O. O. F., of Tonawanda, N. Y., will build a temple at a cost of \$25,000.

A new theater will be built in Elmira, N. Y., at a cost of \$50,000. It is reported that the architect of the theater is Albert C. Westover, Keith Theater Building, Philadelphia. Work on the structure will probably begin early next month.

The Whitcomb House of Rochester, N. Y., will be remodeled at a considerable cost. The hotel is now owned by the Whitecomb Realty Company of Rochester.

The aldermen of Schenectady, N. Y., have decided to issue \$350,000 in bonds for the erection of new school buildings in that city. Commissioner of Public Works Pond and City Engineer Trumbull are among those who discussed the plans for the structure.

The Niederpruem Company, a firm of Buffalo contractors and builders, has increased its capital stock from \$40,000 to \$100,000. The officers are: Nicholas Niederpruem, president and treasurer; Frank G. Niederpruem, vice-president, and Henry Niederpruem, secretary.

Several bids for the erection of the addition to the Rochester, N. Y., postoffice were recently opened in Washington. The lowest bidder was Ambrose Standard of New York, whose bid is \$93,598. The name of the successful bidder will be announced in Washington.

PHILADELPHIA.

PHILADELPHIA, March 18.—There has been a decided improvement in cement quarters during the last fortnight, and judging from the amount of construction work contemplated, most of which is simply awaiting settled weather, the outlook is encouraging. Although the mills of a number of concerns have started up, wholly or partially, the cement stock is low, prices have reached rock bottom, and the trend is upward. There seems to be a universal movement throughout the suburban towns to improve and enlarge sewerage facilities, in order to encourage builders, and so draw residents from the large commercial centers. Hazleton announces a building boom, and contractors are figuring on at least \$600,000 worth of building there. Usually Hazleton's spring operations average \$100,000. Among the suburban towns in line for an early start in municipal and other improvements are Glenside, Willow Grove, Millbourne, Drexel Hill, Llanerch, Lansdowne, Media, Darby, etc. The local record for building work for February shows an increase of 23 per cent over 1907 figures.

Lime, sand and other building materials have been practically at a standstill, but the encouraging signs in building circles are having their effect, and dealers are more optimistic than for some time back. The biggest thing on the boards at this time is the proposed auto race track for Pleasantville, N. J. This town is situated on the edge of the

famous meadows adjoining Atlantic City, and it is given out that the Atlantic City park promoters, who have plans for a four mile race track and accessories near Pleasantville, have bought a tract of 2,000 acres for the purpose. The plans, prepared by Clyde S. Adams, architect, provide for a four-mile concrete auto track to cost \$1,800,000; a straightaway and circular track costing \$240,000; a hotel costing \$150,000; outside stables, sheds and garages costing \$60,000; a one-story and basement hospital costing \$15,000; an exhibition building, 300 by 1,000 feet, of staff construction, costing \$15,000, and fourteen smaller buildings costing \$80,000.

The Builders' Exchange held its twenty-first annual banquet on February 18 at the Hotel Majestic. More than 200 members were present. Cyrus Borgner, president of the association, presided, and Thomas Armstrong was toastmaster. The work of the master builders in the development of the city was the subject for the speeches.

A new bridge across the West Branch, to connect Newberry and Duboistown, has been recommended by the Lycoming county grand jury. The county commissioners estimate that the cost will be \$120,000.

P. H. Sullivan of Renovo was a recent visitor to Philadelphia. Mr. Sullivan owns large tracts of excellent fire clay land, and is one of the leading manufacturers of firebrick in his section. It is said that central Pennsylvania is becoming famous for its fire-clay deposits, and its fire-brick output.

The Whitehall Portland Cement Company, 1721 Land Title Building, are tranquil over trade conditions. After April 1 they will have waterproofing compound, manufactured under a registered patent, to offer their customers. This article they claim to be A1. H. B. Green, sales manager, says that if one desires business in these times he must keep moving.

The William G. Hartranft Cement Company, 1110 Real Estate Trust Building, report a decidedly better feeling in trade circles. William G. Hartman is still sojourning at Phoenix, Ariz., and William H. Ford is looking after the Montreal, Can., office.

Samuel H. French & Co., Callowhill and Fourth Streets, sales agents for the Dexter Portland cement, and manufacturers of paints and mortar colors, report business improving.

The Lawrence Cement Company of Pennsylvania, 616 Harrison Building (L. V. Clark, Philadelphia representative), report that they can discern a betterment in business, and regard the outlook as favorable.

The Alpha Portland Cement Company of Easton, Pa. (909 Harrison Building, this city, Henry Longcope, manager), report that business has been for some time very quiet, but Mr. Longcope regards the present outlook as more encouraging than for some time. Stocks are low and jobs are awaiting settled weather, consequently prices are stiffening. Reports coming from Easton state that this company will resume work at one of the two plants at Martins Creek on March 16. The other plant at this place will start April 1. Both plants at Alpha, N. J., will resume about May 1.

The Bath Portland Cement Company, Bath, Pa., recently removed its Philadelphia office to more commodious quarters at 1502 Real Estate Trust Building. F. M. Hoover, Philadelphia representative, reports mills getting out stuff now and prospects promising.

The Association of American Portland Cement Manufacturers will hold its next meeting at the Bellevue-Stratford Hotel, this city, on April 14 and 15.

Charles B. Bishop, cement worker, 446 South Fifty-second Street, reports that work in February fell behind that of January, but of late there has been considerable doing on indoor work. Settled weather, he thinks, will see activity all along the line.

Walter Loring Webb, consulting engineer, 2221 Land Title Building, reports an increase in inquiries, also some few operations in concrete construction on the boards.

The Engineers' Club is now comfortably housed in its handsome new quarters at 1317 Spruce Street.

On March 2, on application of Albert C. Mott, president of the company, who says the concern has suspended business and owes him \$150,000, Federal Judge Lanning, at Trenton, N. J., ordered the Buckthorn Cement Company, which has a plant in West Virginia, to show cause why a receiver should not be appointed.

Report coming from Washington, D. C., announces that H. Gilbert Dill and Lloyd Dill, reinforced concrete contractors, filed in the District Supreme Court on March 10 a petition in voluntary bankruptcy, with liabilities at \$109,890, mostly unsecured, and assets estimated at \$91,805, of which

\$75,000 is in open accounts and unliquidated claims.

Robert Patterson, for many years one of the largest dealers and shippers of sand, died recently at his home in Morton, Delaware County, Pa. He was 82 years old.

Edwin P. Richardson, a well-known contractor at Upland, Pa., died on March 2, aged 75.

John S. Rogers, a prominent contractor and president of J. S. Rogers & Co. of Moorestown, N. J., died on March 5 at the age of 50.

A. A. Reeves, a widely known contractor, and head of the firm of Stacy Reeves & Sons, this city, died on March 10 at the age of 58.

William J. Armstrong, head of Armstrong & Latta, contractors and wharf-builders, died recently. He was born in 1863.

Articles of incorporation were filed in Camden on February 13 by the Continental Construction Company, capital \$50,000. Incorporators: William G. August of Atlantic City, N. J.; Joseph J. Sleeper of Philadelphia and Adam R. Sloan of Atco, N. J.

The Excelsior Construction Company, New York City, obtained a charter under Delaware State laws on February 21. Capital \$100,000.

The Schuylkill Sand Company, to deal in gravel, sand and other building materials, was chartered under New Jersey State laws on March 6. Capitalization \$50,000. Incorporators: J. E. Sinecock, W. H. Mellon, T. A. Kuntz and J. C. Mellon.

Articles of incorporation were filed at Camden on March 11 by the Juniata Paving Company, general contractors; capital, \$20,000.

A charter was granted to the Manufacturers' Contracting Company of Wilmington, Del., under Delaware State laws. Capitalization, \$100,000.

The William Steele & Sons Company have plans finished for the grand stand, bleachers, etc., at the new grounds of the Athletic Baseball Company's grounds, Twentieth Street and Lehigh Avenue. All structures will be of reinforced concrete, brick and stone.

Oliver Randolph Parry, architect, is preparing sketches for several small houses of concrete block, with shingle roof, to be built on the Delaware River, between Bristol and Norristown.

The Turner-Foreman Concrete Steel Company was given a permit for a reinforced concrete factory building at the southwest corner of Adams and Sepiwa Streets for M. A. Schoenut. The cost will be \$28,000.

Ballinger & Perrot, architects and engineers, have been commissioned to prepare drawings and specifications for a large addition to the plant of the Duplan Silk Company, Hazleton, Pa. The building will have a frontage of 200 feet on Diamond Street, and a depth of 300 feet. A portion of the building will be 50 by 160 feet, with two stories and basement. This portion will have walls of brick and floors of reinforced concrete.

Henry L. Reinhold, Jr., architect, has awarded the contract for Mr. Charles R. Hall's house at Stone Harbor, N. J., to Charles S. Fletcher of Collingswood, N. J., for the sum of \$5,500. The house will be concrete, three stories high, with fourteen rooms; the house measures 30 by 35 feet.

Furness, Evans & Co., architects, have plans for a reinforced concrete garage to be built at Haverford for W. Plunkett Steward. Building will measure 22 by 33 feet.

M. Magee & Co. will build a one-story brick and concrete shop, 69 by 130 feet, on Unruh Street, east of State Road, for Henry Disston & Sons, Inc. Contract price, \$8,500.

A Fireproof Schoolhouse.

INDIANAPOLIS, IND., March 15.—The plans of the Henry C. Brubaker Company, architectural firm, for the new schoolhouse in Cerealinetown contemplate a strictly fireproof building, constructed of brick and reinforced concrete, with only as much wood as is absolutely required for window frames, doors, etc.

Indianapolis school authorities are interested in the plans inasmuch as the disaster at Cleveland has accentuated the desirability of schoolhouses that will not burn.

All walls will be of hard burnt brick and will be of double thickness, the space between to be used for ventilating purposes. All floors and stairways will be of reinforced concrete. There will be three wide entrances, one in the center of the building and one at each end, and those at the ends will be directly at the bottom of the staircases, which will be wide and straight. The corridors will be wide. The specifications require that the reinforced concrete of the schoolroom floors shall bear 100 pounds to the square foot; of the corridors, 150 pounds, and of the stairways, 200 pounds. The building will be two stories high. Work will begin April 1.

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Manufacturers of
THE HIGHEST GRADE OF
PORTLAND CEMENT
IN THE WORLD
Operated under the
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BEST FOR { STONE SAWING
ROOFING
CEMENT BLOCK FACING
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WHITE PLASTER

Washed White Flint Sand

Prices, Samples and Freight Rates furnished on application. Write us.

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CEMENT WATER-PROOFING?

MAUMEE WATER-PROOFING COMPOUND
is made in a dry powdered form.
Added to cement work, of any character, will make concrete work, cemented walls, cisterns, reservoirs, sewers, conduits, etc., etc., absolutely impervious to water and dampness.

IS NOT A WASH
From 2 to 4 lbs to each 100 lbs of cement in different classes of work, will insure dry and waterproof results.
Indispensable for cement blocks.
Invaluable in the manufacture of cement shingles, tiling, sewer pipes, silos and tanks.
Leaks in old cement work can be effectually closed by the use of our compound.
Try a sack if you would see the best Water-Proofing Compound on the market.
Special low prices quoted on car and ton lots—also on smaller lots, upon application.
Send for full particulars, testimonials, etc.

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DAILY OUTPUT 17,000 BARRELS
PLANTS AT CHICAGO & PITTSBURG

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CHICAGO PITTSBURG

The BATES VALVE BAG

The strongest and most perfect
package for shipping and
storing cement

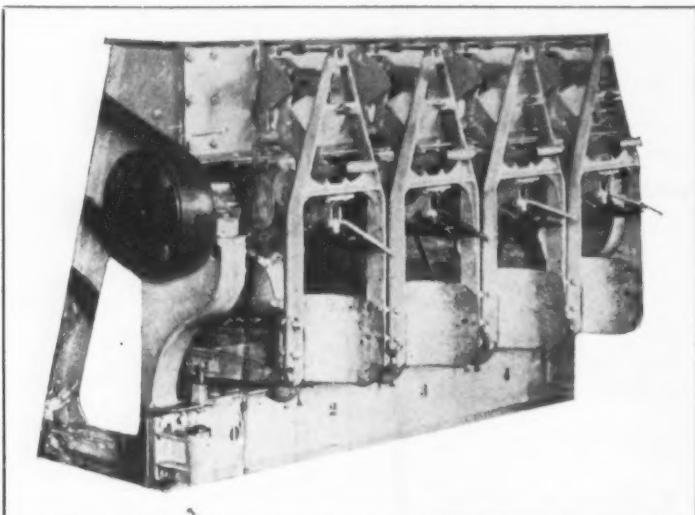


Economical packing and smallest
percentage of breakage 
IT IS WATER PROOF!

The West Jersey Bag Co.
Front and Elm Streets CAMDEN, N. J.

Bates Valve Bags

No tying of paper.
Cotton tied by machinery.
Three men can fill and load in car 800 barrels daily.
Weights best the business has ever known.
Saves thousands of dollars in string and overloading
of sacks.
Not half the dust, caused by old methods.



Write for proposition.

Bates Valve Bag Co.

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The Only Cement With a Reputation Founded Upon Experience. Seventy Years in the Open Markets Without a Single Failure Reported.



THE FAMOUS J. CLARK MILL AT UTICA, ILL.

UTICA HYDRAULIC CEMENT

J. CLARK BRAND

With practically few exceptions, and all of these within a comparative recent period, all the concrete and mortar used in the great engineering and architectural structures of Europe and America have been made with natural cement.

The famous J. Clark brand of natural cement manufactured by the Utica Hydraulic Cement Company, Utica, Ill., was the first Western cement to attain undisputed eminence, and the splendid record that stands to its credit—over seventy years of continuous universal use—is without a peer among the many kinds of cement now claiming public attention.

The J. Clark brand of Utica Hydraulic Cement as manufactured to-day, has exactly the same qualities that first won its fame, and which have constantly sustained its high reputation. Such continuous uniformity can only be maintained by the use of naturally adaptable raw materials manipulated by processes developed with successful experience. Most of the public improvements in which Utica cement was first used stand as silent, solid monuments of the high integrity and uniformity with which the goods have always been produced. The same care and attention is concentrated upon producing those qualities in the output from the same mill with the same raw material that has made the record of the J. Clark brand, which the promoters of any other brand of cement cannot even approach.

In Chicago over 785 miles of sewers, 30,000 manholes and 27,000 receiving basins connected therewith in the water supply tunnels beneath Lake Michigan, with all the branches under the city of Chicago and the river, including that portion now approaching completion near Van Buren street, have been built exclusively with concrete made of Utica cement. The Auditorium, the Board of Trade, Studebaker, Pullman, Chamber of Commerce, Home Insurance, Royal Insurance, Rookery, Phoenix Insurance, Montauk, First National Bank, Tacoma and the Rialto buildings, and practically all the other prominent office buildings, hotels and public buildings in the city of Chicago have used Utica cement, and in the same class of work it is now being used extensively.

As a brick-laying mortar, Utica Hydraulic Cement has no equal in any material as to quality, and it is also economical; while for foundations and all kinds of subterranean engineering works it is the only cement manufactured in the West having a reputation based upon merit and experience.

Utica cement has been used extensively, and is being used to-day, by the Chicago City Railway Company, and all the railroad lines centering in the city of Chicago from all sides and for miles in all directions.

Utica cement is in use in practically all of the public improvements,

and in noted buildings over a very wide territory, including Kansas City, Mo., St. Joseph, Mo., Omaha, Neb., St. Louis, Mo., Denver, Colo., Des Moines, Ia., St. Paul, Minn., Duluth, Minn., Indianapolis, Ind., Cincinnati, Ohio, Cleveland, Ohio, and Toledo, Ohio, and, as a matter of fact, the task would be easier to say where Utica cement has not been used and is not being used than to designate the places where, and the purposes for which it has been used for *seventy years without a single failure to mar its unbroken record of success*.

Where is it possible to find another brand of cement about which such a statement can be truthfully made?

This is the strong argument of the Utica Hydraulic Cement Company offered to support the claim of the superior quality of their output, and it is the basis upon which they invite the patronage of structural engineers and public officials, as well as dealers and consumers of cement.

The works of the Utica Hydraulic Cement Company are at Utica, Ill., and were established by Hon. James Clark, deceased, in 1838. For many years it was his personal care and pride that the brand bearing his name should be second to none in the markets of the world. The record set forth in the foregoing details reflects the credit of his indefatigable effort and unwavering persistency in producing the most perfect product possible to be obtained, and how much all of this has been appreciated by the most eminent engineers in the land from the middle of the last century up to the present time, is expressed in numerous testimonials signed with the names of those men, whose work has marked the progress of civilization and improvement throughout the great Mississippi Basin.

At the beginning of the present year the Utica Hydraulic Cement Company acquired all of the area of raw material applicable to the manufacture of cement in the Utica district, and the following organization was affected: N. J. Cary, president and treasurer; J. F. Blakeslee, secretary, and Anton E. Preuss, sales manager, with executive offices near the works at Utica, Ill.

They will continue to manufacture the highest grade of Utica Hydraulic Cement under the single mark and name of the "J. Clark brand." The slogan is: *"Seventy years' successful record. What do you KNOW about other cements?*

In this page throughout the year, they will take up in detail a few of the important reasons why the J. Clark brand of Utica Hydraulic Cement should be exclusively specified by those who require quality in the cement they use and who have at the same time a due regard for economy, whether in the expenditure of private or public funds.

Letters from supply dealers, public officials and engineers will be cheerfully answered.



UTICA HYDRAULIC CEMENT CO.

UTICA, ILLINOIS



5 YEARS OF UNIFORMITY

COMPARISON OF TESTS ON

WHITEHALL PORTLAND CEMENT

AS MADE BY THE

Department of Public Works of Philadelphia

	SPECIFIC GRAVITY	SETTING		ULTIMATE TENSILE STRENGTH IN POUNDS PER SQUARE INCH					
		Time in Minutes		Neat			1 to 3 Standard Quartz Sand		
		Initial	Hard	24 Hours	7 Days	28 Days	7 Days	28 Days	
Year of 1901...	3.148	82.4	326.5	524	713	765	232	313	
Year of 1902...	3.137	66.6	326.0	444	660	731	201	304	
Year of 1903...	3.140	64.0	322.0	457	749	797	236	311	
Year of 1904...	3.157	64.0	346.0	450	716	759	246	336	
Year of 1905...	3.150	56.0	313.0	446	697	744	252	335	

G. S. WEBSTER
CHIEF ENGINEER

W. PURVES TAYLOR
ENGINEER IN CHARGE

WHITEHALL is honestly, generously and thoroughly made, with individual features which assure perfection of uniformity.

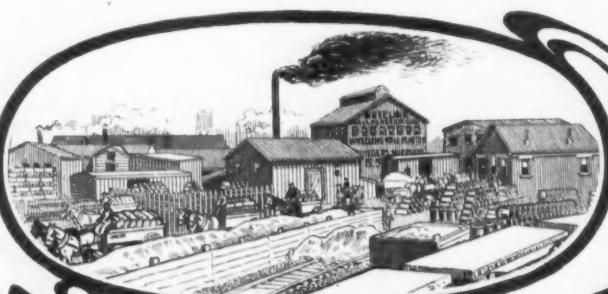
Thousands of barrels have been tested by the City of Philadelphia during the last five years. The comparison of the results obtained are worthy of the careful consideration of those who are determined to have a cement of a uniform quality.

WHITEHALL is the Standard of Perfection.

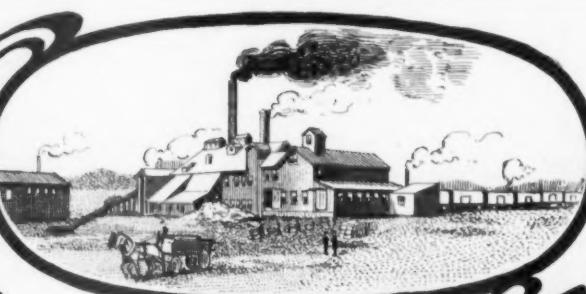
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PHILADELPHIA

BOSTON



Plant at Wheeling, W. Va.



Plant at Port Clinton, O.

Our plant at Wheeling, W. Va., where all our sanded plaster is made, has all the facilities necessary for handling orders of any size. While some neat plaster is made at the Wheeling plant, the greater part of the neat plaster output is manufactured at our Port Clinton, Ohio, plant where our gypsum mines and calcine mills are located.

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The New Thonet Building in New York.

By J. P. H. PERRY.

The reinforced concrete warehouse recently completed by the Turner Construction Company of New York City for Thonet Bros., on West Thirty-sixth Street, is an excellent example of the use of reinforced concrete for a loft building. Seven stories in height, 75 feet in width by 100 feet in depth, this building is of reinforced concrete throughout, except for curtain walls on the sides, which are of brick.

Thonet Bros. use this building for storing bentwood furniture, and demanded an absolutely fireproof structure. In deciding upon the reinforced concrete, they were influenced by the record which this material had made in the Baltimore and San Francisco conflagrations, and in numerous smaller fires throughout the country. To meet this specification the stair wells and elevator wells were enclosed in reinforced concrete partitions, and all windows were made of wire glass in metal frames, and all doors of wood covered with tin, which is generally acknowledged to be the most fireproof type of construction.

The design of this building is based on a live load of 150 pounds per square foot on all floors and of 50 pounds per square foot on the roof. The regular system of the Turner Construction Company was followed, and the resulting plans called for three rows of interior columns about 18 feet center to center across the building, with beams and girders as shown by the accompanying photographs. Cold twisted medium steel bars comprise the reinforcement, which was made up on the first floor of the building and placed by an experienced, technically trained steel foreman, using metal lathers who are skilled artisans in this work. In general, the design called for girders 10 inches wide and 15 inches deep below the slab, with beams 7 inches wide and 12 inches in depth below the floor slab, with a 4-inch floor slab. This thickness of slab includes the granolithic finish, which was monolithic with the slab. The reinforcement in the floors, except in special instances around stair and elevator wells, consisted of five-sixteenth-inch twisted bars about 6 inches on centers transverse to the beams, with $\frac{3}{8}$ inch distributing bars parallel to the beams. In the beams were two $\frac{3}{8}$ -inch and one 1-inch square twisted bars. One of the $\frac{3}{8}$ -inch bars was straight and the other $\frac{3}{8}$ -inch and the 1-inch bar were bent up to the top of the slab at the ends of the beam to take care of the diagonal tensile stresses. The horizontal shear or web stresses were provided for by stirrups which show in the accompanying photographs.

The interior columns were octagonal in section, decreasing in size from a diameter of 25 inches in the basement to 16 inches in the sixth story. The columns in the seventh story were 12 inches square. The column reinforcement varied from story to story, but in general consisted of plain round rods surrounded by a coil of 7/16-inch round steel wire wound to a diameter 3 inches less than the external diameter of the column. Some of this spiral reinforcement is shown in the accompanying photographs. The wall columns vary in size to suit the architectural requirements of the building. Those on the front wall are 28 inches in width, the depth decreasing from 24 inches in the first story to 16 inches in the three upper stories. The columns in the side walls are 42 inches wide by 20 inches deep in the first story and 14 inches in the upper ones. The rear wall columns are similar to those in the front wall. All wall columns are reinforced with square twisted bars in the corners tied together circumferentially with hoops of $\frac{1}{4}$ -inch twisted steel bars placed 12 inches apart vertically. The steel for one of the wall columns shows in one of the photographs.

The front of the building is of unique treatment, architecturally. The design was given much consideration and resulted in a most pleasing effect.

To relieve the plainness of the flat concrete wall, slightly ornamental cornices were built at the second and seventh floors, and by setting the panel between the head and the sill of the windows back from the face of the walls and the column at either side, a further departure from the blank wall was obtained. The concrete used in building this facade was made of broken stone, marble, white sand and Portland cement. This surface, on being tooled to expose the stone and marble, presented an appearance with some



THE THONET BUILDING, NEW YORK.

character to it, in distinction from the dead gray of the ordinary concrete building.

Construction work on this building was begun in early December, 1906, and, despite a most rigorous winter, work was prosecuted until the roof was placed in the late spring, and the building turned over to the owners in about seven months from the time the footings were placed. The tooling and sand blasting of the front of the building, taken together with the delays due to the extreme weather, account for the time taken to erect the building.

The method of construction followed on this job was similar to that used in putting up structural steel buildings—in other words, "skeleton." After the footings had been concreted the basement columns and first floor forms were erected, and the concrete was poured. As soon as the concrete was hard enough to allow of walking upon it, the erection of the second-story columns and second-floor forms was undertaken, and after the job had become smoothly organized the speed of construction averaged a story in two weeks up to the completion of the roof. The curtain walls followed the floors and columns shortly after the removal of the forms. The windows were put in place as soon as possible so that the building might be inclosed and protected from variable weather. The stairs and partitions followed up through the building after the completion of the curtain walls.

The forms were of spruce and North Carolina pine, designed so as to be easily handled, quickly erected and knocked down without injury to the concrete, and without endangering the strength of the building. The time of removing the forms varied, depending on the temperature. In the winter it was



INTERIOR CONSTRUCTION, NEW THONET BUILDING.

generally three weeks before any supports were removed, whereas in the spring forms could be taken down in from six to seven days. After the removal of the forms from under the floor the beams and girders were immediately posted up, and these posts were left in place for about a month, or until the concrete had thoroughly hardened.

Flood Protection Suggested.

PITTSBURG, PA., March 10.—Col. Thomas P. Roberts, the veteran engineer, who has given a lifetime of thought and analysis to the problem of floods, expresses his opinion on why and how such could be averted or controlled at the confluence of the Allegheny and Monongahela Rivers. In speaking of the conditions at Pittsburgh, and in general, he says:

For this I am committed to a system of concrete dikes for those sections where a vertical sea wall would be necessary, such as on the Allegheny, say, from Sixteenth Street to the Point. On the Monongahela side, where there was only a limited overflow at Wood Street, the present sloping wharves could easily be raised to obviate flooding.

This concrete dike would need to be probably about 15 feet thick at its base and could be carried as high as necessary to shut out the highest flood. At the site of the present Allegheny wharves, where flatboats are used for transfer of freights, elevators could be constructed to raise and lower carts and drays.

To prevent the flooding of basements and cellars I would place powerful pumps in covered pits at street ends, to be operated by electric motors, which could be stored nearby. Valves accessible from the pump pits could be used to close the mouths of sewers to shut out back water from the river. Thus the sewers could always be kept clear.

This is a brief outline of the general plan for dikeage and pumping. Of course, there are many other details, such as to prevent infiltration from the river, and so on.

Of course, I have made no estimate as to cost, but that would be trifling, say about \$2,000,000, for the sections where loss is greatest, compared to the enormous saving that would accrue.

Diking has been employed for hundreds of years to prevent flooding. Vienna and Budapest are so protected from the Danube. Little Holland shut out the sea with dikes. In Germany, Italy and France cities built upon rivers which are liable to frequent floods are protected by dikes.

After one experience of a great and disastrous tidal wave Galveston, Texas, a city neither large nor wealthy, constructed an immense sea wall which will defy all the waters of the Gulf. Is it possible that Greater Pittsburgh, the wealthiest city of its population in the world, as shown by its financial activities and productive capacity, is to sit idle and impotent in the face of an annual threat and almost an annual performance of destroying waters?

If a bit of sentiment were entertained the dikes, with little additional expense, could be made a fine esplanade, with fountains and flowers, thus transforming our ugly shores and wharves into an embroidery of beauty and a means of fresh air and recreation.

Concrete in Its Infancy.

PHILADELPHIA, PA., Feb. 23.—A. C. Horn of New York last night read a paper on the advantages of waterproofing in structural concrete before the Vulcan Assembly, at 1315 Columbia Avenue. He said, in part:

"Concrete, so far as the universality of uses to which it may be applied, has no successful competitor. There is no construction work in which this material can not be used, with results often better than can be achieved with the more familiarly known materials. It costs little more than lumber, with the advantage over the latter of being fire-resistant, if not actually fireproof. There are some localities where concrete is cheaper than brick or stone.

"Concrete construction has not yet reached its fruition of usefulness, and there are worlds in it to be conquered. A great victory can be achieved by providing plans for robbing concrete of its one pernicious quality—its proneness to absorb water. Structural waterproofing is not restricted in meaning to protection from ravages of dampness. It covers the protection of building materials from disfigurement and rust."

Some Important Concrete Work.

NEW YORK, March 12.—Among the contracts recently completed by the Turner Construction Company of No. 11 Broadway are: Model factory No. 3 for the Bush Terminal Company, South Brooklyn, New York, 600'x75', six stories and basement, reinforced concrete throughout; the addition to the Robert Gair Building, Brooklyn, 231'x100', nine stories, reinforced concrete throughout, designed for the heaviest printing machinery; the G. B. Seely's Son Building, West Fifteenth Street, New York City, 150'x50', with an "L" 50'x75', five stories, with 50' clear spans on all stories; the Great A. & P. Tea Company's warehouse in Jersey City, 185'x125', nine stories, reinforced concrete columns and floors, with brick curtain walls; and additions and alterations for J. B. King & Co.'s plant at New Brighton, Staten Island, comprising the work on eight different buildings, most of them five stories in height and designed for 600 pounds per square foot floor loads.

An Ideal Concrete Building.

DENVER, CO., March 5.—A nine-story reinforced concrete office building is approaching completion in this city which, on account of some of its features, is quite interesting.

It is built for offices, which, on account of their being fireproof, were nearly all rented before the walls of the building were half up.

The building, from bottom to top, is 112 feet high. The floors are designed for the following live weights: First floor, 120 pounds to the square foot; all other floors 80 pounds to the square foot, with a factor of safety of four. The walls are built of a 1:1½:3½ gravel concrete, veneered with white enamel Tiffany brick and Northwestern terra cotta, making a very handsome finish.

The square concrete columns used vary from 26" square in the first story to 12" square in the upper story, there being eight rows spaced 17.5 feet in one direction and 16 feet in the other, the reinforcement being eight Johnson bars.

Floor girders are 10"x16" to 12"x20", and are reinforced usually with four $\frac{3}{4}$ " Johnson bars. Beams for floors are 9"x16"; they have a span of 17 feet and are spaced 5 feet center to center.

The first floor is 5" thick; all others 3". They are made of 1:1½:3½ gravel concrete, reinforced with $\frac{1}{2}$ " Johnson bars in the first floor and $\frac{1}{3}$ " Johnson bars in all others.

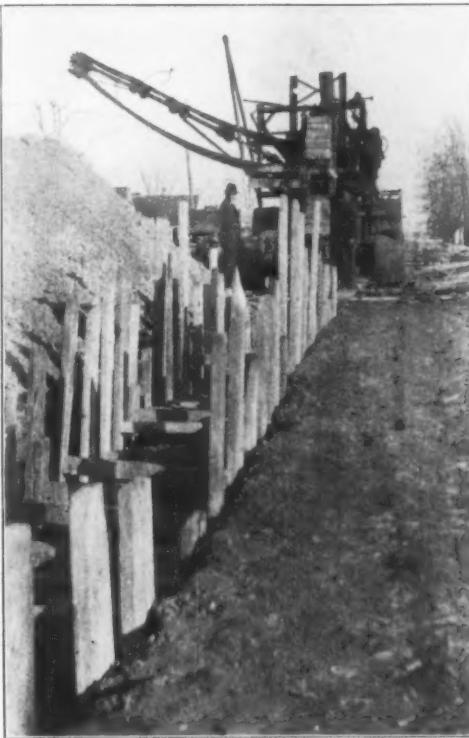
The walls vary in thickness from 12" in the basement to 8" in the upper stories; reinforced with $\frac{1}{2}$ " bars in the basement and $\frac{1}{4}$ " bars in the others. The stairway is made of reinforced concrete with $\frac{1}{2}$ " bars. The stack for the hydraulic elevators is 48" steel, with space around the same for ventilating the boiler-room.

The partitions are 2" thick and composed of truss metal lath and Ideal wall plaster.

The architects and engineers were Messrs. Fallis & Stein of Denver, to whom ROCK PRODUCTS is indebted for the data given. The contractors are the Whitney-Steen Company of New York. Alexander Simpson was the superintendent and Fred E. Carstaphen electrical engineer of construction. Ideal Colorado Portland cement was used throughout, under a guarantee of 500 pounds tensile strength in twenty-four hours.

Concrete Sewer Construction in Illinois.

DECATUR, ILL., March 10.—The photograph here with shows work on a part of the big sewer contract now being finished in this city. The view given is part of the east end sewer which is under contract by S. A. Tuttle & Co. of this city. The length of this branch of the work is about 1½ miles. The largest part of the system is under contract by A. D. Thompson of Peoria and is what is known as the Seventh Ward sewer. This is three miles in length and starts at Sangamon River, where the sewer is 5 feet in diameter. At the upper end it reduces to 30 inches, the concrete at the mouth of the sewer being 5½ inches thick and at the upper end 4 inches. Throughout the construction of this part as well as in the Tuttle & Co. contract, 3-inch mesh expanded metal



BUILDING THE CONCRETE SEWER AT DECATUR, ILL.

for reinforcing was used, varying from 10 to 16 gauge. The Atlas brand of Portland cement is being used exclusively, being furnished by the V. H. Parke & Son Company of Decatur. In connection with the concrete work, collapsible steel forms are used, and for trenching the Parsons trench machine is employed. The entire work was laid out and planned by A. B. Alexander, City Engineer of Decatur. He has also had direct supervision of the construction work.

These two pieces of sewer work are by far the largest that have ever been undertaken in this vicinity. Many serious difficulties in handling the dirt had to be overcome on account of the soil in many places being sand, and there being a lot of water to contend with. Altogether the building of this concrete sewer has required careful engineering, and both of the contracting firms have shown they are experienced in handling the work. They have overcome all the objections of doubting Thomases, who now admit that concrete sewers are not only practicable, but desirable.

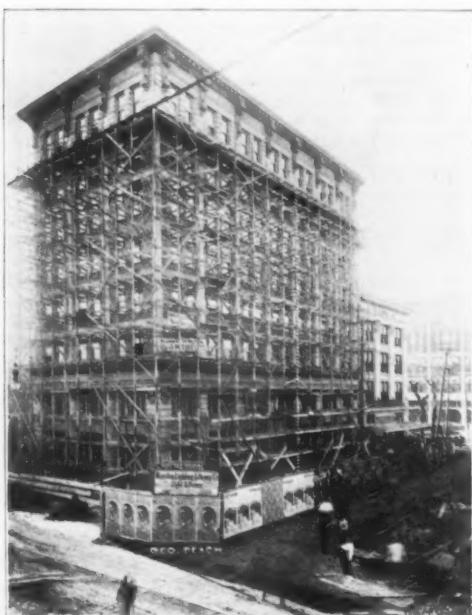
Houston's First Reinforced Concrete Structure.

HOUSTON, TEX., March 19.—The Stewart Building, at the corner of Preston Avenue and Fannin Street, is the first reinforced concrete building erected in this part of Texas. H. H. Jonas is the architect, and W. E. Humphreville the contractor. The building throughout is of skeleton concrete construction, reinforced with steel bars. There are eight stories and basement. The first story will be used for stores and the other seven will be used for offices. All the floor slabs, including attic, ceiling and roof, and all stairs and fire escape platforms are reinforced concrete. The foundation is built on the cantilever plan, the large reinforced concrete cantilevers carrying the building. The smokestack is built of concrete. All partitions throughout the entire building are built out of solid Acme cement plaster and trussed metal lath, no channels being used in any of them.

Crushed granite and limestone and gravel were used in the construction of the building. Towards the last Mr. Humphreville was compelled to use gravel because he could not get granite or limestone fast enough.

The panels between the concrete columns and beams on the outside walls are filled in with eight-inch hollow tile, affording a light but strong hollow wall. The hollow tile is stuccoed with Portland cement mortar, giving a uniform color and texture to the entire surface.

The finish in all the halls and main entrance will be marble and tile. The building will be heated with steam. There will be hot and cold water, electric and gas lights, and all of these except the gas will be supplied by the building's own plant. The water is taken from an artesian well in the basement and will be pumped to a reinforced concrete tank on top of the building and from there distributed where



THE STEWART BUILDING, HOUSTON, TEXAS.

required. There will be large concrete vaults on each floor, including the basement, and two large electric elevators of the latest design.

The interior of the building will be as complete in every particular, and the exterior, architecturally considered, will present a fine appearance. The massive concrete columns extending from sidewalk level to the third floor have ornamental capitals of terra cotta supporting a broad terra cotta frieze cornice of original design which extends across both fronts of the building. The main entrance on Fannin Street has a marquise of ornamental ironwork, while on Preston Avenue two graceful Ionic columns define the entrance.

The Kahn bar was used, and the following concern furnished materials: The Northwestern Terra Cotta Company, Chicago, terra cotta; W. S. Dickey, Kansas City, hollow tile; the Mosaic Tile Company of Zanesville, tile. The elevators were furnished and put up by the Otis Elevator Company. Mr. Humphreville says he used 4,300 barrels of Atlas and Lehigh Portland cement, and that he employed the Ransom mixer in preparing the concrete.

Los Angeles Skyscraper.

LOS ANGELES, CAL., March 10.—Architect Harrison Albright, who has won no little fame as a designer of important concrete buildings, has completed plans for a ten-story skyscraper for the Consolidated Realty Company, and the excavations for the foundation have already been started. It will have a frontage of 150 feet on Hill Street and 126 feet on Sixth Street.

Above the ground floor, the building will be in the form of a hollow square and there will be forty-five office rooms on each of the nine upper stories, making a total of 405 offices. All rooms will have direct daylight and will open from corridors. Modern accommodations will be attached to each office.

The central portion of the ground floor will contain a lobby 51x52 feet wide, while in the corner will be constructed a store 62x64 feet. Another store, 64x124 feet, will be provided for at the left of the lobby. Both will have entrances from the lobby as well as sidewalk. In the rear of the lobby another room, 62x85 feet, will be built with lobby and Sixth Street entrances.

The basement under the entire structure will carry the mechanical equipment for the building and provide three rooms, 77x77, 62x82 and 64x140 feet—for merchandise or other storage.

The building will be constructed, in great part, of reinforced concrete and all floors will be of cement.

Milwaukee's Auditorium.

MILWAUKEE, WIS., March 12.—A large force of workmen began active construction operations on the Auditorium this morning, working under the cement and concrete contracting firms of Conrad Raulf, Jr., & Co. and the Lewis Construction Company. These have the contracts to construct the concrete and cement piers and foundations, and both are determined to push the work.



THE IDEAL BUILDING, DENVER, COL.

Establishes Time Record.

CAMBRIDGE, MASS., March 10.—Benjamin Fox, a leading concrete contractor, holds the record for putting up large concrete buildings in this vicinity. Only fourteen weeks elapsed between the breaking of the ground and the occupancy of the buildings by the owners, the Boston Woven Hose Company. There are three buildings, each four stories, and the floor space covers an area of 216,000 square feet. They are of monolithic construction and the material is all concrete. The aggregate length is 900 feet. Foundations, outside and inside columns, beams and haunches, floor and roof slabs, curtain walls, inside partitions and the stairs are made of all-concrete, etc.

The excavations were begun on July 22, under the direction of John Wolf & Co.; by September 1 the second floor slab was in position; September 14 the third floor slab was done; and September 25 the building was four stories in height. By October 7 the roof had been finished.

The buildings required 10,000 tons of crushed stone, 6,000 cubic yards of filling, 24,000 yards of granolithic flooring, 61,000 bags of cement, 800 tons of reinforcing bars, 500,000 feet of lumber, 3,000 yards of sand, 1,448 windows. The delivery of this material required 800 freight cars, a train six miles long.

To assist in the record-breaking construction concrete mixers were set up on the ground having a capacity of 16 yards of concrete per hour. Elevators carried the material to platforms at the various floor levels. The services of 500 men were required to compete successfully with this race against time.

Originally the owners had in mind the erection of buildings with brick walls, steel floor beams and plank floor. But the studies for monolithic concrete structures which were submitted showed such a considerable saving in cost and time that the hose company changed its original ideas.

This record bit of construction building seems to show that all concrete buildings can now be erected more cheaply than buildings which have walls of brick, wood joists and wood floors. The concrete structure is as thoroughly fireproof as any structure can be. Moreover, concrete can be handled with facility that tends to make for record time.

Concrete for Oil Tanks.

OAKLAND, CAL., March 12.—Experiments have been made to determine the availability of concrete for oil storage tanks, and it was found that the material was entirely suited for the purpose. Accordingly a number of them have been built at El Paso, Tex., by one of the railroad companies of that section which is engaged in extensively handling oil from the fields of that State. Up to this time it was generally agreed that the presence of oil had some serious effect on the concrete, but if this is true it was not shown by the experiments.

Where Concrete is Used.

To give an idea of the large amount of concrete used in the construction of the locks of the Panama Canal, figures have been compiled showing that the amount of concrete to be used in building these locks would suffice to construct 22,842 eight-room city houses, 30x30 feet, with two stories and basement, and with concrete floors and concrete roof. Allowing each of these homes a 75-foot lot they would make a continuous street from New York to Philadelphia, with enough houses left over to make a row on one side of the street from Philadelphia to Washington.

Concrete Piles Supplanting Wood Piling.

SALEM, MASS., March 12.—A notable instance of concrete piles supplanting wood piling is found in the case of the reinforced concrete laundry building built for G. L. Hooper & Son in this city. This structure is four stories high, 100 feet deep, 60 feet wide, with a one-story wing for the boiler and engine-room.

The soil conditions of the site, which was formerly occupied by an abandoned dock, called for a piling foundation. The original designs and estimates were for wood piles cut off below the level of tidewater, but it developed that the cost of the concrete footings could be decreased considerably by using concrete piling.

Raymond concrete piles were ultimately selected of an average length of 20 feet, 6 inches in diameter at the point, 20 inches at the top, and with a taper of half an inch to the foot. Each pile carries a load of 25 tons, this being double the load capacity, per pile, of the wood piles originally considered. Difficulty was anticipated from old wharf timbers which were found in the soil, but the sheet steel shell which is used in the Raymond system passed them with no delay or diversion of direction. Considerable broom-

ing would undoubtedly have taken place had wood piles been used.

The piles are arranged in groups of four, spaced 3 feet on centers in the form of a square. Each group supports a column or wall pier and is capped by a concrete slab 5 feet, 6 inches square and 24 inches thick, extending 15 inches beyond the center of the piles. The head of each pile projects six inches into the capping. The concrete chimney, 48 inches in diameter and 95 feet high, is supported by a group of nine piles. These are reinforced with rods that extend into the footing of the chimney to form an anchorage.

Railway Engineering and Maintenance of Way.

The ninth annual convention of the American Railway Engineering and Maintenance of Way Association was held at the Auditorium Hotel, Chicago, March 17, 18 and 19. The meeting was called to order by the president, A. W. Johnston, general manager of the New York, Chicago & St. Louis Railway. Following the president's address, which bore more directly on the association work, came reports from various committees on subjects pertaining to railway construction and maintenance. "Ballasting" was discussed to some extent, along the grounds of slope and grade. Quality and sizes were not discussed under the topic of "Masonry." The committee reported the appointment of A. O. Cunningham, C. W. Boynton, G. F. Swain, C. H. Moore, G. H. Scribner, Jr., the last two being alternates, as a subcommittee to cooperate with the joint committee on "Concrete and Reinforced Concrete," and recommended that for the best interests of the work of the joint committee the subcommittee be continued indefinitely.

The committee further reported that it had reviewed and edited the "Specifications for Stone Masonry" and presented them for final approval.

The committee had issued a circular of inquiry as to the most economical size or combination of sizes for stone to be used in stone concrete, as applied to the different classes of work, and from the answers received drew the following conclusions:

Considering plain concrete only, and assuming that the aggregate will range in size from $\frac{1}{4}$ inch to the maximum named, a preference is shown for the following maximum sizes: For foundations, $2\frac{1}{2}$ inches; for abutments, 2 inches; for arch rings, $1\frac{1}{2}$ inches; for coping, bridge seats and thin walls, 1 inch.

The subject of the reported failures of concrete structures and the probable cause is under investigation by the joint committee on "Concrete and Reinforced Concrete."

The waterproofing of masonry—methods, results, cost and recommended practice—is also under consideration by the same committee.

Regarding typical standard designs now in use for masonry culverts, both stone and concrete, the committee reported that stone structures of this class are rapidly going out of use, and therefore eliminated them from consideration and confined itself to concrete culverts, plain and reinforced. Data have been secured from a number of the principal roads of this country and Canada, including standard plans for concrete culverts up to 20 feet span, and arranged in form for direct comparison. This work had been attended with much difficulty and delay, and this portion of the report was not in shape for publication at this time.

The following officers were elected for the ensuing year:

President—Walter G. Berg, chief engineer Lehigh Valley, New York, N. Y.

First Vice-President—W. McNab, principal assistant engineer Grand Trunk, Montreal, Canada.

Second Vice-President—L. C. Fritch, assistant to president Illinois Central, Chicago, Ill.

Treasurer—W. S. Dawley, chief engineer Missouri and North Arkansas, St. Louis, Mo.

Secretary—E. H. Fritch, 962 Monadnock Block, Chicago, Ill.

Directors—Charles S. Churchill, chief engineer Norfolk and Western Railway, Roanoke, Va.; E. W. Wendt, assistant engineer Pittsburgh and Lake Erie, Pittsburgh, Pa., and D. D. Carothers, chief engineer Baltimore and Ohio, Baltimore, Md. (to fill vacancy).

Busy Western Firm.

SAN FRANCISCO, CAL., March 18.—The Ransome Concrete Company of California, with offices in the Crocker Building, is one of the latest to operate in this field. They use the Ransome concrete reinforcing system in all their work. Among the large buildings they have had charge of are: The San Juan Portland Cement Company, the Oakland Cotton Mills, the Prospect Investment Company and George H. Sanders. The officers of the company are: President and general manager, Ira C. Voss; engineer, George

D. Hudnutt; consulting engineer, Ernest L. Ransome of New York.

River Improvements.

The following contracts for the construction of dams on the upper Mississippi River have been awarded: Capt. A. Kirchner at Fountain City, Wis., for work from Rock Island to Burlington, Ia.; Capt. A. V. Fetter of Rock Island, Ill., for work from Burlington to Hannibal, and Capt. A. J. Whitney of Rock Island for work from the mouth of the Wisconsin River to Savannah. Each of these contracts amounts to about \$40,000.

New York Incorporations.

Among the new incorporations in New York since the last issue of ROCK PRODUCTS are the following:

Engineering and Concrete Construction Company, Hornell, New York; capital, \$25,000. Directors: James L. Costello, 221 Washington Avenue; Thomas A. Carr and Pierre D. Lewis, 206 Washington Avenue, Brooklyn, New York.

Dion Realty Company, New York; capital, \$10,000. Directors: William F. Norton, 129 West 125th Street; James J. Fitzpatrick, 132 West 129th Street; John J. Mooney, 300 Lenox Avenue, New York.

Seal Realty Company, New York; capital, \$2,000. Directors: Irving Bachrach and Henriette Bachrach, 74 East Ninety-second Street; Henry Schmeidler, 203 Broadway, New York.

Engineering and Concrete Construction Company, Hornell, New York; capital, \$25,000. Directors: James L. Costello, 221 Washington Avenue; Thomas A. Carr and Pierre D. Lewis, 206 Washington Avenue, Brooklyn.

Superior Construction Company, New York; capital, \$100,000. Directors: Stanley Holcomb Mollenson, 2432 Seventh Avenue New York; Charles F. Hammond, 156 Berkeley Place; Charles Howard, 1771 East Twelfth Street, Brooklyn.

Bush & Jones, New York (contracting); capital, \$50,000. Directors: Samuel S. Jones, 80 Washington Square, East; Charles G. Phillips, 606 West 135th Street; Edward Limberger, 1412 Prospect Avenue, New York.

Akron Building Company, New York; capital, \$1,000. Directors: Leo S. Bing, 1038 Fifth Avenue; Alexander M. Bing, 56 East Eighty-third Street, New York; Samuel A. Herzog, 71 East Eighty-seventh Street, New York.

John O. Merritt Company, Port Chester, Westchester County (contracting); capital, \$20,000. Directors: John O. Merritt, James A. Daly and Malcolm Merritt, Port Chester, N. Y.

New York Holding & Construction Company, New York; capital, \$25,000. Directors: Frederick W. Kristeller, 606 West 178th Street; Frank Vernon, 300 West 106th Street, New York; and A. L. Vincent, 121 Remsen Street, Astoria, L. I.

Garnjost Construction Company, Yonkers, N. Y.; capital, \$10,000. Directors: Fredrick A. Garnjost, 84 High Street; Rudolph C. Garnjost, 105 Jefferson Street; Paul H. Garnjost, 2 Vineyard Avenue; all of Yonkers.

New York Jamaica Realty Company, Brooklyn; capital, \$200,000. Directors: William P. Rae and Harold C. McNelty, 180 Montague Street; George W. Palmer, 781 Manhattan Avenue, Brooklyn.

Charles Hensle Reality Company, New York; capital, \$5,000. Directors: Charles Hensle, Martha Hensle and William Austin, 146 North High Street, Mt. Vernon, N. Y.

West Star Roofing Company, New York; capital, \$500. Directors: George Moskowitz, 448 Amsterdam Avenue; Rosa Moskowitz, 117 East 113th Street; Max Moskowitz, 51 Columbia Street, New York.

Buonsignore Realty Corporation, New York; capital, \$100,000. Directors: George M. Buonsignore, 1133 Broadway; Edward J. Mountain, 601 West 138th Street, New York; Mayo Hubbell Barber, 68 Sharp Avenue, Port Richmond, N. Y.

One Hundred and Seventy-first Street Realty Company, New York; capital, \$70,000. Directors: Charles Garfiel, Isidore Moll and Marie Moll, 452 West 163rd Street, New York.

Coast and Interior Contracting Company, New York; capital, \$100,000. Directors: A. V. Jones, 123 West 116th Street; F. W. Mills, 154 Nassau Street; H. M. Browne, 422 St. Nicholas Avenue, New York.

Heindel Manufacturing Company, New York (engines, machinery and builders' supplies); capital, \$200,000. Directors: William F. Kintzing, Hanover, Pa.; Mois H. Averam, 225 Fifth Avenue; Charles Freeman, 35 Nassau Street, New York.

T. J. Tompkins Company, New York (building materials); capital, \$1,000. Directors: Claude L. Coom, 416 West 118th Street; Thomas D. Tompkins, 51 West Seventy-sixth Street, New York; Edward W. Week, 155 Chilton Street, Elizabeth, N. J.



A Sample Political Code.

The masons' and bricklayers' unions at Paterson, N. J., succeeded in defeating a proposed amendment to the city building code providing that concrete foundations under wooden buildings not over three stories in height should be no less than 12 inches wide when composed of one part Portland cement, two parts of sand and four parts of broken stone. The contention was that a foundation of this character was not equivalent to a 12-inch brick wall in strength and as to its value in a foundation. An old clause in the code provided for foundations 18 inches wide for the frame structures, and the masons and bricklayers claimed that this dimension should apply to the concrete foundations. It was so ordered, and consequently, few, if any, concrete foundations will go under the frame buildings of Paterson, for a time at least. No comment is necessary upon such a ruling for the readers of *ROCK PRODUCTS*, but it shows the false and foolish attitude of those who resist the progress of the age, not to mention the injustice to the citizens who are forced to take an inferior foundation for more money, against their better knowledge and without their consent. Such a ruling will likely not last very long, for there are schools in Jersey.

Suggestions for School Buildings.

YOUNGSTOWN, O., March 7.—William H. Ham, vice-president of the National Association of Cement Users for the section on laws, ordinances and insurance, has prepared for the board of education of Youngstown a report on the fireproofing of school buildings, in which he points out where lies the greatest danger in buildings that are now in use, and makes recommendations as to the most economical method of making these buildings safe. He also describes the type of construction that should be adopted in new buildings to prevent a recurrence of the Colliwood school disaster:

"In view of the calamity that has overtaken Cleveland, there can be no question of the wisdom of the Youngstown Board of Education in taking whatever steps are necessary to make the school buildings that are now in use safe and to establish definitely a policy hereafter to construct no school buildings which are not absolutely fireproof. How to accomplish these results without increasing the burdens of the taxpayer unduly is the question of the moment, and to this end the writer makes the following general recommendations:

For Old Buildings.

"All school buildings which are not known to be thoroughly fireproof should be examined by the school committee, the superintendent of schools and chief of the fire department of the city.

"Steps should be taken to prevent rapid spread of fire, especially from the corridors to the main rooms. This can be accomplished in old buildings quickly by the installation of a fireproof partition between the corridors and main rooms with steel doors having wire glass transoms, or with no transoms.

"If possible every school building should have an exit at the opposite end of the building from the stairways. This exit should be protected from fire by brick walls extending at least six feet from the building, no other openings into this place being allowed. Fire escapes should be made of steel or cast iron. The doors to these fire escapes should be unlocked every morning and opened. A fire drill should be instituted, using the fire escapes, and practice should be constant throughout the school year. In order that the children may not be frightened at the sound of alarm of fire, the practice should be carried out with regular fire alarm each week at no specified time.

Regarding New Buildings.

"Where the school committee is limited for funds with which to build a fireproof building, it should be impressed upon the architects that the interior of the building is the most important of all features, and that any saving that is to be made should be made in the looks of the exterior and not in the construction of the interior of the building. It often occurs that for the sake of beautifying the city an elaborate exterior is designed. This is, of course, the ideal, but where the maximum of space must be built for the minimum amount of money, a plain, almost severe exterior, with thoroughly fireproof floors and partitions, should be the prevailing idea of construction.

"If the rooms are not too large the cost of a thoroughly fireproof building, with reinforced concrete floors and columns and a neat brick exterior, can be constructed for approximately 10 per cent increase in first cost over the construction of a brick and wood building. Insurance will soon bring down the cost of the investment to a point where the city cannot afford to build otherwise than fireproof. In this type of a school building children could be actually kept at work at their desks while the furniture in one part of the building was burning—there would be nothing else to burn in the building.

"This type of construction is exceedingly well suited to school buildings, and should be investigated by every building committee before adopting a brick and wood building.

"Disasters due to fire in this country are unpardonable, and we are criticized severely by foreign countries, where the lack of wood has been a blessing for years."

The Nebraska Prize Awarded.

WESTERN, NEB., March 9.—At the annual convention of the Nebraska Cement Users' Association held in Lincoln, Neb., February 4 to 7, a prize was offered to the party bringing in the photograph of the best executed work from the Nebraska field of concrete construction of his own labors. The prize has been awarded to the Artificial Stone Company of Bruning, Neb., managed by H. R. Park of that place. The building thus photographed is the German Bank of Bruning, Neb., constructed during the summer of 1907, built of faced concrete brick, the trimmings being of concrete construction faced with white cement. It is 25x34 feet, with a basement under the entire structure. The basement walls and footings are of concrete. There is also a fireproof vault in the basement directly under the vault in the banking-room, the upper vault having a reinforced concrete floor. All the basement walls are 16 inches thick, while the walls of the superstructure are 13 inches thick.

The concrete brick in this building were submitted to the building committee for inspection before the building was under construction, and their finding was that the cement brick absorbed far less moisture than the best hydraulic pressed brick of other materials. The building was designed by J. P. Guth, architect, of Omaha, Neb., and the total cost, including walls and basement, with floors, was \$3,500.

Concrete Blocks Tested by Fire.

BIRMINGHAM, ALA., March 12.—Recently a small so-called concrete house on Second Avenue was destroyed by fire and turned out to be a dangerous trap imperiling the lives of the firemen. This was not by any means on account of the small amount of concrete used in this structure, but Chief Bennett of the Fire Department nevertheless issued a statement in which he strongly condemned the material that had been used in the construction of the house, and called for an investigation of concrete blocks in regard to their fire resistance. This test was made yesterday by the Chief himself in the presence of many citizens, and the concrete block, of course, came out victorious. A full story building was constructed of blocks manufactured by the Fulenwider Concrete Company, a local concern. These blocks were not picked, but on the other hand were taken from the yard promiscuously. The building was fired and oil was added to the flames to make the heat quick and intense. According to the local press, hotter or fiercer fire was seldom seen. The blocks passed the fire test and after the fire had spent itself the walls stood absolutely intact.

The Birmingham *Age-Herald*, commenting on the matter, says:

"As concrete is fast coming into use in Birmingham as elsewhere, for house building, the test yesterday was reassuring and will have a most bene-



GERMAN BANK BUILDING, BRUNING, NEB.
(For this work H. R. Park of the Artificial Stone Company was awarded the prize of the Nebraska Cement Users' Association.)

I. E. Watenpaugh, secretary of the Nebraska Cement Users' Association, commenting on the prize award, says:

"Mr. Park says he has been in the concrete business for three years and has had other experience in concrete construction. We congratulate Mr. Park on his success in securing the prize at the 1908 Convention and trust that it may not only instill him to greater things but that it may be an inspiration to others of this State and surrounding States to strive to excel in this most promising of present-day industries.

"The Nebraska Cement Users' Association is in the field for the very purpose of doing its part in helping to build up the concrete industry to the highest standard of excellence, making the most beautiful and permanent homes, churches, public buildings and other structures that it is possible to make from the best building material at hand.

"In conclusion, while the public realizes the success of the third annual convention held at Lincoln, February 4 to 7, we know that they will look for something good from Nebraska in 1909 and it is our determination that they shall not be disappointed."

At the annual meeting of the stockholders of the Altoona Concrete Construction and Supply Company, Frank Brandt was reelected president.

Official effect on an important and growing local industry. As a matter of fact there can be no better building material than concrete blocks properly made. Such blocks as those tested yesterday would seem as good material as stone itself. Builders and contractors, however, must from past experiences know when blocks are properly made, and the Building Inspector of Birmingham should pass upon all concrete blocks, as well as other material used in the construction of buildings here. If other building materials stand as severe tests as those blocks used in yesterday's demonstration, such would appear to be most excellent."

Concrete conduits will supersede the present clumsy wooden troughs now in use at Columbus, Ga.

Harlan Shean has perfected plans for a block-making plant at West Point, Ky., and expects to have it in operation this month.

The firm of Bratz & Sholes, workers in concrete, Utica, N. Y., has been dissolved and a new firm, consisting of Ray Sholes and Fred S. Reese, has been formed under the name of Sholes & Reese. The new firm has leased the premises on Main Street and will start the manufacture of concrete blocks and all kinds of concrete work. Mr. Sholes, who is well known as an expert in this line, will look after the practical end of the business.

STANDARD BLOCKS.

Specifications as Adopted at the Buffalo Convention of the National Association of Cement Users.

Following is the revised and corrected text of the standard specifications for the manufacture of concrete blocks as adopted at the Buffalo convention of the National Cement Users' Association, and here printed for the first time in authentic form.

STANDARD SPECIFICATIONS FOR CONCRETE HOLLOW BLOCKS.

Proposed by the Committee on Standard Specifications, E. S. Larned, C. E., Chairman.

Concrete hollow blocks made in accordance with the following specifications, and meeting the requirements thereof, may be used in building construction, subject to the usual form of approval, required of other materials of construction, by the bureau of building inspection.

1. **Cement.**—The cement used in making sand blocks shall be Portland cement, capable of passing the requirements as set forth in the "Standard Specifications for Cement," by the American Society for Testing Materials.

2. **Sand.**—The sand used shall be suitable silicious material, passing the one-fourth inch mesh sieve, clean, gritty, and free from impurities.

3. **Stone or Coarse Aggregate.**—This material shall be clean broken stone, free from dust, or clean screened gravel, passing the three-quarter ($\frac{3}{4}$) inch, and refused by the one-quarter ($\frac{1}{4}$) inch mesh sieve.

4. **Unit of Measurement.**—The barrel of Portland cement shall weigh 280 pounds net, either in barrels or sub-divisions thereof, made up of cloth or paper bags, and a cubic foot of cement shall be called not to exceed 100 pounds or the equivalent of 3.8 cubic feet per barrel. Cement shall be gauged or measured either in the original package as received from the manufacturer, or may be weighed and so proportioned; but under no circumstances shall it be measured loose in bulk.

5. **Proportions.**—For exposed exterior or bearing walls:

(a) Concrete hollow blocks, machine-made, using semi-wet concrete or mortar, shall contain one (1) part cement, not to exceed three (3) parts sand, and not to exceed four (4) parts stone, of the character and size before stipulated. When the stone shall be omitted, the proportions of sand shall not be increased, unless it can be demonstrated that the percentage of voids and tests of absorption and strength allow in each case of greater proportions, with equally good results.

(b) When said blocks are made of slush concrete, in individual molds and allowed to harden undisturbed in same before removal, the proportions may be one (1) part cement to not exceed three (3) parts sand and five (5) parts stone, but in this case also, if the stone be omitted the proportion of sand shall not be increased.

6. **Mixing.**—Thorough and vigorous mixing is of the utmost importance.

(a) **Hand Mixing.**—The cement and sand in correct proportions shall first be perfectly mixed dry, the water shall then be added carefully and slowly in proper proportions, and thoroughly worked into and throughout the resultant mortar; the moistened gravel or broken stone shall then be added, either by spreading same uniformly over the mortar, or spreading the mortar uniformly over the stones, and then the whole mass shall be vigorously mixed together until the coarse aggregate is thoroughly incorporated with and distributed throughout the mortar.

(b) **Mechanical Mixing.**—Preference shall be given to mechanical mixers of suitable design, and adapted to the particular work required of them; the sand and cement, or sand and cement and moistened stone shall, however, be first thoroughly mixed before the addition of water, and then continued until the water is uniformly distributed or incorporated with the mortar or concrete:—Provided, however, that when making slush or wet concrete (such as will quake or flow), this procedure may be varied with the consent of the bureau of building inspection, architect or engineer in charge.

7. **Molding.**—Due care shall be used to secure density and uniformity in the blocks by tamping or other suitable means of compression. Tamped blocks shall not be finished by simply striking off with a straight edge, but, after striking off, the top surfaces shall be trowelled or otherwise finished to secure density and a sharp and true arris.

8. **Curing.**—Every precaution shall be taken to prevent the drying out of the blocks during their initial set and first hardening. A sufficiency of water shall first be used in the mixing to perfect the crystallization of the cement, and, after molding, the blocks shall be carefully protected from wind-currents, sunlight, dry heat or freezing, for at least five (5) days, during which time additional moisture shall be supplied by approved methods, and occasionally thereafter until ready for use.

9. **Aging.**—Concrete hollow blocks in which the ratio of cement to sand be one-third ($\frac{1}{3}$) (one part cement to three parts sand) shall not be used in the construction of any building in the (city) of _____ (town) of _____ until they have attained the age of not less than three (3) weeks.

Concrete hollow blocks in which the ratio of cement to sand be one-half ($\frac{1}{2}$) (one part cement to two parts sand) may be used in construction at the age of two (2) weeks, with the special consent of the bureau of building inspection and the architect or engineer in charge.

Special blocks of rich composition, required for closures, may be used at the age of seven (7) days with the special consent of the same authorities.

The time herein named is conditional, however, upon maintaining proper conditions of exposure during the curing period.

10. **Marking.**—All concrete blocks shall be marked for purposes of identification, showing name of manufacturer or brand, date (day, month and year) made,

and composition or proportions used, as, for example, 1:3:5, meaning one cement, three sand and five stone.

11. **Thickness of Walls.**—The thickness of bearing walls for any building where concrete hollow blocks are used may be ten (10) per cent less than is required by law for brick walls. For curtain walls, or partition walls the requirements shall be the same as in the use of hollow tile, terra cotta or plaster blocks.

12. **Party Walls.**—Hollow concrete blocks shall not be permitted in the construction of party walls, except when filled solid.

13. **Walls—laying of.**—Where the face only is of hollow concrete block, and the backing is of brick, the facing of hollow block must be strongly bonded to the brick, either with headers projecting four (4) inches into the brick work, every fourth course being a heading course, or with approved ties; no brick backing to be less than eight (8) inches. Where the walls are made entirely of concrete blocks, but where said blocks have not the same width as the wall, every fifth course shall extend through the wall, forming a secure bond, when not otherwise sufficiently bonded. All walls, where blocks are used, shall be laid up with Portland cement mortar.

14. **Girders or Joists.**—Wherever girders or joists rest upon walls so that there is concentrated load on the block of over two (2) tons, the blocks supporting the girder or joists must be made solid for at least eight (8) inches from the inside face. Where such concentrated load shall exceed five (5) tons, the blocks for at least three courses below, and for a distance extending at least eighteen (18) inches each side of said girder, shall be made solid for at least eight (8) inches from the inside face. Wherever walls are decreased in thickness, the top course of the thicker wall shall afford a full solid bearing for the webs or walls of the course of blocks above.

15. **Limit of Loading.**—No wall, nor any part thereof, composed of concrete hollow blocks, shall be loaded to an excess of eight (8) tons per superficial foot of the area of such blocks, including the weight of the wall, and no blocks shall be used in bearing walls that have an average crushing at less than 1,000 pounds per square inch of area, at the age of twenty-eight (28) days; no deduction to be made in figuring the area for the hollow spaces.



E. S. LARNED, C. E.
Chairman Committee on Specifications, N. C. U. A.

16. **Sills and Lintels.**—Concrete sills and lintels shall be reinforced by iron or steel rods in a manner satisfactory to the bureau of building inspection, and the architect or engineer in charge, and any lintels spanning over four feet, six inches shall rest on block solid for at least eight inches from the face next the opening and for at least three courses below the bottom of the lintel.

17. **Hollow Space.**—The hollow space in building blocks, used in bearing walls, shall not exceed the percentage given in the following table for different height walls, and in no case shall the walls or webs of the block be less in thickness than one-fourth their height. The figures given in the table represent the percentage of such hollow space for different height walls.

Stories	1st	2nd	3rd	4th	5th	6th
1 and 2...	33	33				
3 and 4...	25	33	33			
5 and 6...	20	25	25	33	33	33

18. **Application for Use.**—Before any such material be used in buildings, an application for its use and for a test of the same must be filed with the bureau of building inspection. In the absence of such a bureau the application shall be filed with the chief of any department having such matters in charge. A description of the material and a brief outline of its manufacture and proportions used must be embodied in the application. The name of the firm or corporation, and the responsible officers thereof, shall also be given, and changes in same thereafter promptly reported.

19. **Preliminary Test.**—No hollow concrete blocks shall be used in the construction of any building unless the maker of said blocks has submitted his product to the full tests required herein, and placed on file with the bureau of building inspection, or other duly authorized official, a certificate, from a reliable testing laboratory, showing that representative samples have been

tested and successfully passed all the requirements hereof, and giving in detail the results of the tests made.

No concrete blocks shall be used in the construction of any building until they have been inspected and approved, or, if required, until representative samples be tested and found satisfactory. The results of all tests made, whether satisfactory or not, shall be placed on file in the bureau of building inspection. These records shall be open to inspection upon application, but need not necessarily be published.

20. **Additional Tests.**—The manufacturer and user of such hollow concrete blocks, or either of them, shall at any and all times, have made such tests of the contents used in making such blocks, or such further tests of the completed blocks, or of each of these, at their own expense, and under the supervision of the bureau of building inspection, as the chief of said bureau shall require.

In case the result of tests made under this condition should show that the standard of these regulations is not maintained, the certificate of approval, issued to the manufacturer of said blocks, will at once be suspended or revoked.

21. **Certificate of Approval.**—Following the application called for in clause No. 18, and upon the satisfactory conclusion of the tests called for, a certificate of approval shall be issued to the maker of the blocks by the bureau of building inspection. This certificate of approval will not remain in force for more than four months, unless there be filed with the bureau of building inspection, at least once every four months following, a certificate from some reliable physical testing laboratory showing that the average of at least three (3) specimens tested for compression, and at least three (3) specimens tested for transverse strength, comply with the requirements herein set forth. The said samples to be selected by a building inspector, or by the laboratory, from blocks actually going into construction work.

22. **Test Requirements.**—Concrete hollow blocks must be subjected to the following tests: Transverse, compression and absorption, and may be subjected to the freezing and fire tests, but the expense of conducting the freezing and fire tests will not be imposed upon the manufacturer of said blocks.

The test samples must represent the ordinary commercial product, of the regular size and shape used in construction. The samples may be tested as soon as desired by the applicant, but in no case later than sixty days after manufacture.

Transverse Test.—The modulus of rupture for concrete blocks at 28 days must average one hundred and fifty, and must not fall below one hundred in any case.

Compression Test.—The ultimate compressive strength at 28 days must average one thousand (1,000) pounds per square inch, and must not fall below seven hundred in any case.

Absorption Test.—The percentage of absorption (bearing the weight of water absorbed, divided by the weight of the dry sample) must not average higher than 15 per cent, and must not exceed 22 per cent in any case.

23. **Condemned Block.**—Any and all blocks, samples of which, on being tested under the direction of the bureau of building inspection, fail to stand at twenty-eight (28) days the tests required by this regulation, shall be marked condemned by the manufacturer or user and shall be destroyed.

24. **Cement Brick.**—Cement brick may be used, as a substitute for clay brick. They shall be made of one part cement to not exceeding four parts clean sharp sand, or one part cement to not exceeding three parts clean sharp sand and three parts broken stone or gravel passing the one-half inch and refused by the one-quarter inch mesh sieve. In all other respects, cement brick must conform to the requirements of the foregoing specifications.

Specifications Governing Method of Testing Concrete Hollow Blocks.

1. All tests required for approval shall be made in some laboratory of recognized standing, under the supervision of the engineer of the bureau of building inspection, or the architect or engineer in charge, or all of these. The manufacturer may be present or represented during said tests, if he so desires. Approval tests are made at the expense of the applicant.

2. For the purpose of the tests, at least twelve (12) samples or test pieces must be provided. Such samples must represent the ordinary commercial product and may be selected from stock by the bureau of building inspection, or, in the absence of such a bureau, by the architect or engineer in charge.

In cases where the material is made and used in special shapes or forms, too large for testing in the ordinary machines, smaller-sized specimens shall be used as may be directed.

3. In addition to the tests required for approval, the weight per cubic foot of the material must also be obtained and recorded.

4. Tests shall be made in series of at least three (3), except that in the fire test a series of two (four samples) are sufficient.

Transverse tests shall be made on full-sized samples. Half samples may be used for the crushing, freezing and fire tests. The remaining samples are kept in reserve, in case duplicate or confirmatory tests be required. All samples must be marked for identification and comparison.

5. The transverse test shall be made as follows: The samples shall be placed flatwise on two rounded knife edge bearings set parallel seven inches apart. A load is then applied on top, midway between the supports, and transmitted through a similar rounded knife edge, until the sample is ruptured. The modulus of rupture shall then be determined by multiplying the total breaking load in pounds by twenty-one (three times the distance between supports in inches) and then dividing the result thus obtained by twice the product of the width in inches by the square of the depth in inches. $R = \frac{2b}{3W^2}$. No allowance should be made in figuring the modulus of rupture for the hollow spaces.

6. The compression test shall be made as follows: Samples must be cut from blocks so as to contain a full web section. The sample must be carefully measured, then bedded flatwise in plaster-of-paris, to secure a uniform bearing in the testing machine, and crushed. The total breaking load is then divided by the area in compression in square inches. No deduction to be made for hollow spaces; the area will be considered as the product of the width by the length.

ROCK PRODUCTS

7. *The absorption test* shall be made as follows: The sample is first thoroughly dried to a constant weight at not to exceed 212 F. The weight must be carefully recorded. It is then placed in a pan or tray of water, face downward, immersing it to a depth of at least 2 inches. It is again carefully weighed at the following periods: Thirty minutes, four hours and forty-eight hours, respectively, from the time of immersion, being replaced in the water in each case as soon as the weight is taken. Its compressive strength, while still wet, is then determined at the end of the forty-eight hours period, in the manner specified in section 6.

8. *The freezing test* shall be made as follows: The sample is immersed, as described in section 7, for at least four hours, and then weighed. It is then placed in a freezing mixture or a refrigerator, or otherwise subjected to a temperature of less than 15 degrees F. for at least 12 hours. It is then removed and placed in water, where it must remain for at least one hour, the temperature of which is at least 150 degrees F. This operation is repeated ten (10) times, after which the sample is again weighed while still wet from the last thawing. Its crushing strength should then be determined as called for in section 6.

9. *The fire test* is made as follows. Two samples are placed in a cold furnace in which the temperature is gradually raised to 1,700 degrees F. The test piece must be subjected to this temperature for at least 30 minutes. One of the samples is then plunged in cold water (about 50 degrees to 60 degrees F.) and the results noted. The second sample is permitted to cool gradually in air, and the results noted.

10. The following requirements must be met to secure an acceptance of the materials: The modulus of rupture for concrete blocks at 28 days old must average one hundred and fifty and must not fall below one hundred in any case. The ultimate compressive strength at 28 days must average one thousand pounds per square inch and must not fall below seven hundred in any case. The percentage of absorption (being the weight of water absorbed divided by the weight of the dry sample) must not average higher than 15 per cent and must not exceed 22 per cent in any case. The reduction of compressive strength must not be more than thirty-three and one-third per cent, except that when the lower figure is still above one thousand pounds per square inch, the loss in strength may be neglected. The freezing and thawing process must not cause a loss in weight greater than ten per cent, nor a loss in strength of more than thirty-three and one-third per cent, except that when the lower figure is still above one thousand pounds per square inch, the loss in strength may be neglected. The fire test must not cause the material to disintegrate.

General Information Bearing on Specifications.

No other department of the cement industry has so felt the need of standard specifications and uniform instructions as we find in the manufacture of cement blocks.

There is today a large and growing demand for this material, and its general and almost unlimited use is only retarded by lack of confidence on the part of architects, builders and resident owners who see only the wretched results that attend the efforts of the misinformed and inexperienced, and overlook the splendid possibilities of this form of construction in the hands of skilled and experienced operators.

In considering the requirements that cement blocks should meet as a structural material, we must take into account the use in which they are to be put.

We have, in brick classification, the terra cotta brick, mud brick, and dry pressed face brick, and the hard burned, medium and light common brick; all of which find extensive and legitimate use, and yet vary widely in strength, fireproof qualities and appearance.

The granites, limestones, sandstones and marbles are generally accepted in first-class construction, and yet differ greatly in weather- and fire-resisting qualities.

Lumber, of course, is very combustible, and yet the different varieties show marked contrast in strength, durability and fire-resisting qualities, and we have to learn of any municipal requirements stipulating the kind of lumber for building construction.

With these facts in mind, is it not fair to ask that some latitude be granted in the manufacture and use of cement blocks?

If an owner in most localities chooses to build the outside walls of his factory or residence of light-burned common brick, showing an absorption of 30 per cent water, who is there to say no? In fact, the average so-called hard-burned brick will absorb from 20 to 22 per cent water and will pass muster under most municipal and architects' requirements; yet our leading municipal specifications require that cement blocks shall not exceed 15 per cent absorption, regardless of the use to which they are put.

Cement blocks may properly be used in substitution of other materials for:

1. Foundations.
2. Exterior and superstructure walls carrying weight.
3. Curtain walls, exterior and interior.
4. Fire walls and partitions.
5. Veneering.
6. Retaining walls.
7. Cornice, trim and ornamental work.
8. Filler blocks for floor slabs.
9. Chimney flues, etc., etc.

In this variety of work it is at once seen that uniform and the highest quality is not required.

Experience in the use of other materials has taught us to recognize practically without repeated or preliminary tests the quality of most materials for which cement blocks are substituted, and this fact alone gives them an advantage over the newer material.

Commercial, local and natural causes are, however, calling for the more extensive use of cement blocks; this demand will increase as our manufacturers of cement blocks gain experience, and by the encouragement and observance of rational building requirements. It is of prime importance to every city and town in this country, having a building code, that they should recognize and include cement blocks as a building material.

The writer of the specifications herewith submitted, Mr. E. S. Larned, C. E., 101 Milk Street, Boston, Mass., as chairman of the committee on tests of cement and cement products of the National Association of Cement Users, recommended in his report, last January, that a specification committee be appointed by the association to draw up a standard specification and uniform instructions covering the manufacture of cement blocks, with the hope that this form, when prepared, might be offered to all the cities and leading towns in the United States for adoption.

As a basis upon which to consider the standard specifications and uniform instructions, my suggestions included the following in part:

Cement.—Only a true high-grade Portland cement, meeting the requirements and tests of the standard specifications of the American Society for Testing Materials, shall be used in the manufacture of cement blocks for building construction.

Unit of Measurement.—The barrel of Portland cement shall weigh 380 pounds net, either in barrels or subdivisions thereof, made up of cloth or paper bags, and a cubic foot of cement, packed as received from the manufacturer, shall be called 100 pounds or the equivalent of 3.8 cubic feet per barrel. Cement shall be gauged or measured either in the original package as received from the manufacturer, or may be weighed and so proportioned; but under no circumstances shall it be measured loose in bulk, for the reason that when so measured it increases in volume from 20 to 33 per cent, resulting in a deficiency of cement.

Proportions.—Owing to the different values of natural sand or fine crushed screenings for use in mortar mixtures, due not only to its mean effective size, but also to its physical characteristics, it is difficult to do more in a general specification than fix the maximum proportions of good sand that may be added to cement.

Sand., or the fine aggregate, shall be suitable siliceous material passing the one-fourth inch mesh sieve, and containing not over ten per cent of clean, unobjectionable material passing the No. 100 sieve. A marked difference will be found in the value of different sands for use in cement mortar. This is influenced by the form, size and relative roughness of the surface of the sand grains, and the impurities, if any, contained.

Only clean, sharp and gritty sand, graduated in size from fine to coarse and free from impurities, can be depended upon for the best results. Soil, earth, clay and fine "dead" sand are injurious to sand, and at times extremely dangerous; particularly in dry and semi-wet mortars, and they also materially retard the hardening of the cement. An unknown or doubtful sand should be carefully tested before use to determine its value as a mortar ingredient. Screenings from crushed trap rock, granite, hard limestone and gravel stones are generally better than bank sand, river sand or beach sand in Portland cement mortars (but not so when used with natural cement, unless the very fine material be excluded).

So-called clean, but very fine sand, has caused much trouble in cement work, and should always be avoided, or if impossible to obtain better, the proportion of cement should be increased. Stone screenings and sharp, coarse sand may be mixed with good results, and this mixture offers some advantages, particularly in making sand-cement blocks.

For foundations or superstructure walls exposed to weather, carrying not over eight tons per square foot, the maximum proportion shall not exceed four parts sand to one part cement. This proportion, however, requires extreme care in mixing for uniform strength and will not produce water-tight blocks. We recommend for general work not over three parts sand, if well graded, to one part cement, and the further addition of from two to four parts of clean gravel stones passing the three-fourths inch sieve and retained on a one-fourth inch mesh sieve, or clean screened broken stone of the same sizes. These proportions, with proper materials and due care in making and curing, will produce blocks capable of offering a resistance to crushing of from 1,500 to 2,500 pounds per square inch at twenty-eight days.

(For the best fireproof qualities limestone screenings or broken sizes should be excluded, but otherwise are all right for use.)

Where greater strength is desired, particularly at short periods, from two to six weeks, we recommend the proportions of one part cement, two parts sand and from one and one-half to three parts gravel or broken stone of sizes above given. Blocks made of cement, sand and stone are stronger, denser, and consequently more waterproof than if made of cement and sand only, and are more economical in the quantity of cement used.

Mixing.—The importance of an intimate and thorough mix cannot be overestimated. The sand and cement should first be perfectly mixed dry and the water added carefully and slowly in proper proportions, and thoroughly worked into and throughout the resultant mortar; the moistened gravel or broken stone may then be added either by spreading same uniformly over the mortar, or spreading the mortar uniformly over the stones, and then the whole mass shall be vigorously mixed together until the coarse aggregate is thoroughly incorporated with and distributed throughout the mortar.

We recommend mechanical mixing wherever possible, but believe in the thorough mixing of cement and sand dry before the addition of water; this insures a better distribution of the cement throughout the sand, particularly for mortar used in machine-made blocks of a semi-wet consistency. For fine materials, such as used in cement blocks, it is necessary that the mechanical mixer be provided with knives, blades or other contrivances to thoroughly break up the mass, vigorously mix the same and prevent balling or caking.

Curing.—This is a most important step in the process of manufacture second only to the proportioning, mixing and molding, and if not properly done, will result either in great injury to or the complete ruin of the blocks. Blocks shall be kept moist by thorough and frequent sprinkling, or other suitable methods, under cover, protected from dry heat or wind-currents for at least seven days. After removal from the curing shed, they shall be handled with extreme care, and at intervals of one or two days shall be thoroughly wet by hose sprinkling or other convenient methods. We recommend curing in an atmosphere thoroughly impregnated with steam. This method serves to supply needed moisture, prevent evaporation, and in some measure accelerates the hardening of the blocks.

We view with distrust, in the present knowledge of the chemistry of cement, any artificial, patented or mysterious methods of effecting the quick hardening of cement blocks or other cement products. If such method be proposed it should be thoroughly investigated by competent authority before use.

Time of Curing.—This is also most important in its effect upon the industry, and is directly and vitally influenced by the following conditions:

1. Quality, quantity and setting properties of the cement used.
2. Quality, size and quantity of the sand or fine aggregates used.
3. Amount and temperature of water used.
4. Degree of thoroughness with which the mixture is made.

5. Method of curing, weather conditions and temperature.

6. Density of the block as affected by the method and thoroughness of tamping or pressure applied.

Before fixing the minimum permissible time required in curing and aging blocks, it is well to consider the important effect of addition of sand upon the tensile strength of cement mortar.

The following tabulation has been interpolated from the diagram of cement mortar tests prepared by Mr. W. Purves Taylor of the Philadelphia Municipal Laboratories. The results of the neat tests and the 1 to 3 mortar tests (i. e., one part cement to 3 parts crushed quartz by weight) are averaged from over 100,000 tests, while the other results are based on from 300 to 500 tests:

TENSILE STRENGTH IN POUNDS PER SQ. IN. OF PORTLAND CEMENT.

	7ds	28ds	2mo	3mo	4mo	6mo	12mo
Neat cement	710	768	760	740	732	758	768
1 to 1 mortar	590	692	690	680	685	695	
1 to 2 mortar	370	458	460	455	453	458	460
1 to 3 mortar	208	300	310	310	310	308	
1 to 4 mortar	130	210	230	230	232	232	232
1 to 5 mortar	80	150	185	195	195	197	

It must also be kept in mind that these results are obtained under practically uniform and theoretically correct conditions, in the amount of water used, thoroughness of mixing and molding and storage of samples until tested.

Comparing the results at 28 days, it is apparent that the 1 to 5 mortar has only 71 per cent of the strength of the 1 to 4 mortar, and but 50 per cent of the strength of a 1 to 3 mortar. The 1 to 4 mortar has but 70 per cent of the strength of a 1 to 3 mortar and 46 per cent of the strength of a 1 to 2 mortar.

The ratio of compressive strength to tensile strength is not quite constant for all periods of time, and for the several mixtures above given; but the compressive strength, or resistance to crushing per square inch, may be approximately obtained by multiplying the tensile strength given in the above table by the constant six (6). (Note: This would increase with the age of the mortar, and would be greater for good gravel or stone concrete than for the clear mortar of which a given concrete is made.)

In fixing the maximum time required for curing and aging blocks before use, due regard should be given to the proportions used. It is manifestly wrong in principle to require as long a period for a 1 to 2 or a 1 to 3 block as might seem necessary for a 1 to 4 or a 1 to 5 block, and it is obviously unsafe to attempt to use a block of lean proportions in as short a time as a rich mixture would gain the necessary strength.

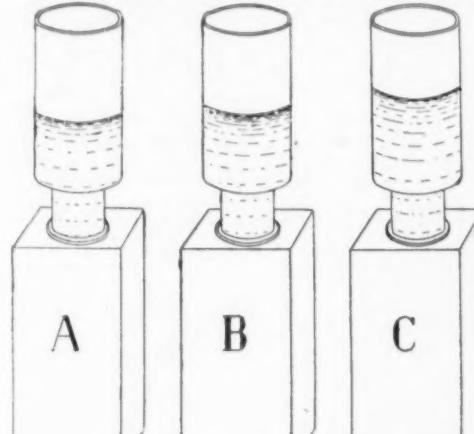
This might be supposed to be met by fixing the minimum resistance to crushing of blocks (of all compositions); but it must be kept in mind that a very small percentage of the blocks are tested, by reason of the expense, in convenience, or lack of facilities.

The required minimum resistance to crushing of first-class blocks used for exterior and bearing walls should not be imposed upon blocks for minor and less important uses.

Marking.—All cement blocks should be stamped (in process of making), showing name of manufacturer, date (day, month and year) made, and composition or proportions used. The place of manufacture, methods and materials should also be open to inspection by representative of the building department, the architect, engineer or individual buyer.

Absorption Tests.

Very often it is desirable to be able to determine for oneself or to demonstrate to others the comparative water absorption of stone, concrete blocks, tile, brick or other building material. Tests made by the experimental laboratories generally serve as a basis for calculations in a general way as regards the various classes of tile, sand-lime brick, etc. Mere figures, however, do not tell the story as clearly to some people as a practical object lesson, and it will often be desirable therefore to be able to give an ocular demonstration which can be readily understood.



by everybody. Very useful for this purpose are glass bottles filled with water which are to be used as shown in the illustration, which is taken from the *Ton-Industrie Zeitung*. The bottles are inverted and placed on the blocks to be tested. The illustration shows the simplicity of this test. It is seen at a glance that block C has absorbed less water than blocks A and B, and the comparative amount of liquid left in the bottle clearly shows the comparative density of the material.

SAND-LIME BRICK

The Monterey Sand-Lime Brick Plant.

BY DR. ERNEST HORSTMANN.

Among the sand-lime brick plants of the whole West Coast, especially California at Seaside, near Monterey Brick and Stone Company at Seaside, near Monterey, Cal., takes a special place, not by exceptional greatness, for the plant produces merely 16,000 brick daily, and is, therefore, a proportionately small one, but by the superiority of its product.

This fact serves to be the more pronounced as, however favorably sand-lime brick plants are installed, the manufacturers of first-class products, in their endeavor to place them on the market successfully, have to suffer from detriments, due less to the manipulations of the "red rivals" than to the products of low value of other sand-lime brick plants, working in the same district and for the same market.

At the present time and, doubtless, for the future, all propositions are given for a prosperous and even rosee development of the sand-lime brick industry, provided the products come up to the reasonable demands being in conformity with the wishes of the consumers as well as to the modern standard of the sand-lime brick technique. This and that, and not more or less, is to be expected of a first-class sand-lime brick if it shall compare with a first-class clay brick, one and the same if common or face brick.

The fact that a good sand-lime brick in all qualities coming in question is absolutely equal, in part even superior, to a good clay brick is just as well established as the fact that an inferior clay brick is not better than an inferior sand-lime brick.

All pretensions of the opponents of sand-lime bricks being partial or not based on proofs are not able to push aside these facts; they merely prove the consciousness of weakness in their arguments against the new and mighty aspiring industry.

The fact that the products of the Monterey Brick and Stone Company pass for and are to be recognized as being first-class is based alone on the absolute fulfillment of all conditions to be taken in account for the manufacturing of a good product. These are: Good raw materials and best character of machinery. The raw materials at the disposition of the plant are ideal.

The sand is at hand in the immediate proximity of the plant and is of all degrees of fineness in grain. It has 92½ per cent silica. There is no necessity of grinding the sand, though I personally take the standpoint that an addition of 15 to 20 per cent of finely ground sand, 150 to 200 mesh, is generally to be commended, yet I am convinced that in Monterey this would scarcely, or only in a very minor degree, improve the manufacture. For the practical criticism and worth of the product it would be without influence.

The lime is the very purest marble-lime, containing 92 per cent CaO, and is without disadvantageous impurities. It is recognized to be one of the best quick-slaking fat limes in the West.

The manufacture of the sand-lime brick is carried on by means of the Schwarz system, which achieved in Germany a very high position on account of its merits and economy.

The three conditions for the manufacture of a first-class sand-lime brick to be fulfilled besides the proportion of good raw materials are unquestionably fulfilled in Monterey, and they are:

Uniformity in the absolute perfection of slaking the calcined lime into hydrated lime.

Uniformity as to the moisture of the prepared sand-lime mixture to be pressed.

Uniformity in the percentage of lime and sand.

Of the qualities of brick produced by the Monterey plant, merely one may be mentioned, besides the high perfection and regularity of the bricks, the sharp edges and corners, namely: the high crushing strength, being in the average 3,000 pounds per square inch, a degree seldom attained by a first-class clay brick, excepting a klinker.

In this connection it may be mentioned that the Koenigliche Polizei Präsident Berlin, Abtheilung Baupolizei (Royal Police Presidency at Berlin, Department of Public Works) has unconditionally permitted the use of sand-lime bricks of such a crushing strength instead of burned clay-clinker.

Besides face and common brick of the natural color the Monterey plant produces colored bricks of most beautiful tints, also molded bricks and blocks of all designs, by the use of special hand presses.

The plant in its disposition and its appearance is built according to the type generally adopted, so that a special description of the interior is needless. The illustration shows the limekiln and gives an idea of the general lay-out of the plant.

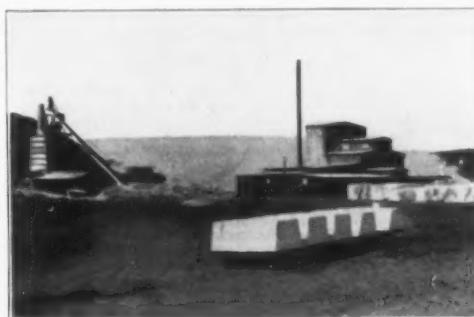
The crushing and grinding of the burned lime is attained by a Sturtevant crusher and a Sturtevant mill. Sand and lime, in the ready percentage of 93 to 7, come together in the Schwarz system preparing-machine, and are thence automatically transferred to a five-mold Grath press, installed by the Illinois Supply and Construction Company, St. Louis.

Two hardening cylinders, each 50 feet long, and of the regular diameter, for 120-pound pressure, serve for the hardening of the bricks. The hardening cylinders are without movable supports on their foundations, contrary to the accepted German practice.

Power is generally by a locomotive boiler of 150-horsepower and 120-pound pressure, utilizing oil fuel, and by a donkey boiler for wood fuel. For feeding the boilers there are a duplex steam pump and an injector. A heater and a feed-water tank complete the outfit of the boiler-house, which delivers the energy for a single-cylinder steam-engine of 90-horsepower and 140 revolutions, the Schwarz preparing-machine and the two hardening cylinders.

For the burning of the lime rock the company owns a kiln using oil fuel, and having a capacity of thirty barrels daily. Erecting its own limeburner, the company has not only established for itself a possibility of always obtaining a perfectly, freshly burned material, but also a material of the highest degree of perfect calcination by easy stages at a degree of heat not exceeding 1,000° C.

The plant is connected with the branch line Monterey-Castroville of the Southern Pacific Railroad by



THE MONTEREY SAND-LIME BRICK PLANT.

a narrow-gauge spur track about 1,500 feet in length. The entire complement of men employed by this company, including all the varied works of loading and unloading of lime rock, lime, brick, etc., numbers sixteen persons.

SAN FRANCISCO, CAL., Feb. 3, 1908.

New Plant at Watertown, Wis.

WATERTOWN, Wis., Feb. 26.—A new sand-lime brick factory is promised for this city. Its promoter is Architect Philip Dean. Plans for building are completed and the work of erection will commence as soon as the weather will permit. The company will be incorporated under the State laws. The capital stock will be \$35,000, and the incorporation papers will be filed within a few weeks.

The location of the factory will undoubtedly be at Wausau Junction, as that will afford shipping facilities over both railroads. The buildings will be of frame construction and are expected to be completed so that operations can be begun August 1.

After a large enough stock of brick is on hand the buildings are to be brick veneered. The plant complete, according to estimate, will represent an investment of \$25,000.

The raw material will be quarried at Rib Hill. Two grades of brick will be manufactured. No. 1 grade is to be made of a composition of quartz and lime; No. 2 brick will be made of common sand and lime.

W. H. Crume, general manager of the Tri-City Sandstone Brick Company, Moline, Ill., was a recent caller on ROCK PRODUCTS. He reports a successful business and that the demand for sand-lime brick is constantly increasing.

The School Board of San Antonio, Texas, have adopted sand-lime brick of local make to be used hereafter for school work, instead of clay brick. The change was made on the recommendation of August Herff, city school architect, and the associate architects, Atlee B. Ayres and L. M. J. Dielmann. Approximately 500,000 brick will be needed for the work.



Holds Spring Meeting.

COLUMBUS, O., March 13.—The Central Ohio Tile Manufacturers' Association held its spring meeting in the Star Hotel Thursday, with delegates present from all parts of Franklin and the adjoining counties. Only routine business was transacted, but some rather encouraging reports were received on the prospects for spring and summer demand for tile. H. C. Black of Columbus is the president of the association, and W. C. Wilson of Grogan the secretary.

To Install a Rattler Tester.

TOLEDO, O., March 5.—The city authorities are to install a rattler brick testing machine here to determine the quality of vitrified paving blocks. The rattler tester is cylindrical in form and its operation thoroughly determines the durability of the paving blocks. The moisture is first taken out of the bricks and then ten bricks, about 1,000 cubic inches, are placed in the machine. With the blocks are placed about 300 pounds of cast-iron shot, in two different sizes. Some are oblong in shape, about 2x4 inches, and the others are about 1½-inch cubes. The contents are then thoroughly churned, being subjected to about 1,800 revolutions per hour. The quality of the bricks is determined by the wear and tear. If there is more than 18 per cent waste the bricks are declared unfit for use and are discarded.

Ten Barges of Paving-Brick.

PORTSMOUTH, O., March 6.—The Peebles Paving Brick Company of this city have secured the contract, through F. L. Manning, for 2,500,000 brick to be used in paving work to be done in Cairo, Ill., the coming season. The consignment when loaded for shipment will occupy about ten barges.

New Incorporations.

NEW YORK, N. Y.—Castleton Brick and Tile Company; capital stock, \$50,000. Directors: Isaac H. Love, George Lodge, L. H. Leber.

BEAVERVILLE, Ill.—Beaverville Brick and Tile Company, to manufacture brick and tile; capital, \$15,000. Incorporators: Hilarie Lambert, Louis Lambert, Henry Nourie.

AULANDER, N. C.—The Walton Brick Company; capital stock, \$20,100. Incorporators: J. A. Dunning, C. B. Walton, H. W. Webb and others.

WILMINGTON, N. C.—Cronley Brick Company; capital stock, \$10,000. Incorporators: G. T. Flynn, W. J. Flynn, J. H. Hooper and others.

JERSEY CITY, N. J.—Seaboard Clay Manufacturing Company; capital stock, \$2,000,000; to manufacture building materials, clay, tile, stone brick, etc. Incorporators: Carlyle Garrison, Henry A. Oetjen, Clarence S. Blake.

KENOSHA, Wis.—The Davy Burnt Clay Ballast Company; capital, \$120,000. Permit granted to do business in Texas.

LAKE CHARLES, La.—Bradley Brick and Tile Company, Ltd.; to manufacture pressed brick and to develop generally the clay industry in all its branches. Officers and directors: S. T. H. Bradley, president and general manager; H. H. Hanagrieff, vice-president and assistant manager; I. C. Carter, secretary; W. M. Hanagrieff, treasurer, and B. J. Cobb.

THE STANDARD FIRE BRICK COMPANY, PUEBLO, COLO., recently secured a contract for 500 cars of brick to be used in constructing coke ovens in Old Mexico.

Fire recently destroyed the plant of the Louisville Brick and Tile Works at Louisville, Ky. The loss is estimated at \$25,000, partially covered by insurance.

THE BEAUMONT BRICK PLANT OF THE GULF STATES BRICK COMPANY, BEAUMONT, TEX., after being closed down since last October, resumed operations last week, and is now running full time with the usual number of employees.

THE AFFAIRS OF THE ZANESVILLE TILE COMPANY, which was last fall thrown into the hands of a receiver, are so shaping themselves that a reorganization is expected and a dismissal of the receiver will be effected. The plant has been under operation ever since the receiver was appointed last fall.

NEW JERSEY DEALERS.

Continued from page 31.

such associations do for the trade. In my opinion, however, the National Association can never be of real national importance and influence as at present organized with its membership of individuals or firms scattered all over the country, without local organization or control. They cannot obtain enough members in any one section so organized to have great influence. The more the organization spreads out with few members, the thinner the spread and the less the influence.

In association work as in business, it might be well to be guided by the experience of others. Take fraternal organizations as an example. The remarkable growth of such bodies is made possible to a great extent by the fact that interest is aroused and maintained by local chapters or lodges; friends all banded together for mutual interest. These bodies are guided by rulings made by their State and national organizations, and by frequent meetings of the local bodies keep up the interest of their members.

The great political parties of our country also get their vast power by just such complete organization, local, State and national. The interest of citizens is maintained by their participation in and control of local affairs.

A certain member said it would be disloyalty to the National Association to assist in forming State associations. In reply to that I ask, is a man disloyal to his country and is he less patriotic because he loves his home city, and takes pride in, and is loyal to, his State? The man who devotes his time and talents trying to improve the conditions of his local government, doing the things close at hand that need to be done, is of great importance and value to his country, and is the more patriotic for it. And so it is also with association work. A National Association organized and working on such lines would be the concentrated power of all dealers.

To the officers and members of our New Jersey Association I make this suggestion: That we use our influence to cause the National Association to become of really national importance, in that we endeavor to have it changed to a representative body, having as members all of the members of the State associations of the country, or of the State and local associations; and that such organizations be represented in the national body by representatives in proportion to their membership; the National association to be maintained by the State associations, each paying in proportion to its membership. Falling in such a plan, I further suggest that we start the project of forming a national representative body. Preferably we should work through the present national association, because it is now an established organization with a splendid lot of members, and it could be made the nucleus of a grand organization.

I referred to this subject in a casual way at the national convention in Philadelphia two years ago, and at different times have noted that others are giving the subject consideration. There are many State associations and I suggest that we at once communicate with and lay this plan before them.

The manufacturers are organized. There is an association of Portland cement manufacturers, and while they say it is so conducted that the rules are not binding upon its members, yet we know it is cohesive enough so that certain regulations are made and maintained, such as credit terms, cement bag rules, etc. Personally I believe that that organization is a good thing for the trade. It tends to give stability to the business; it gives to us an organization of manufacturers in one line of our business with whom we could make rulings.

We dealers organized on national lines would have an association equal in every way to any organization of manufacturers. Our delegates could meet them as equals, with equal strength. We would have an organization of dignity, ranking in importance with any commercial body in this whole country.

We believe that prices should be based so that there would always be a differential favorable to the dealers. The consumers should know that it is not their right to buy at dealers' prices and they would expect to pay more. We may not be able to bring about ideal conditions in this world, but we certainly can improve them. They say, "All things come to him who waits." That may be so, but I think we are more likely to get good things if we hustle while we wait. I don't believe in waiting at all. We don't want good conditions to remain away until the time of our children's children. We want and need them right now. So we of New Jersey say to every one connected with the trade—individuals and associations, dealers and manufacturers: Cooperate. Let us unite with the desire and the determination to bring about the best possible trade conditions.

J. D. Loizeaux of Plainfield took the view that when a retailer had spent time, money and energy in establishing a trade, that trade was his property. It would be impossible for dealers to handle the numerous brands of cement, for instance, which were manufactured today. Three or four of these, he said, were enough, and the matter of price only could determine which would be the favored brands. In discussing the relationship of manufacturer and retailer, the speaker asserted that it was the duty of the manufacturer to advertise his product thoroughly and reach the consumer in matters of sales through the retail dealer. He urged that there be a mutual co-operation which would hasten the time when such ideal conditions exist for the good of both retailer and manufacturer. He had not experienced any friction from interference of any manufacturer in his business at Plainfield, and the matter of price and quality of product alone determined what he should purchase. "It is impossible for manufacturers to increase business by selling direct to the consumer," said Mr. Loizeaux, "and I know that they many times in this way open accounts with irresponsible small contractors which cause loss. Considering the question from this viewpoint, it seems to me that the establishment of the rule, 'Sell to dealers only,' guarantees the salvation of both our and the manufacturers' business."

The president then addressed the convention briefly

on "Giving Preference to Associate Members in Placing Orders." He appealed to the members not to overlook this policy of reciprocity, which was the just reward to the associate members for their efforts in helping to maintain the association and its aims.

CEMENT BLOCK MANUFACTURERS.

The subject, "How Shall Cement Block Manufacturers be Classified?" was first discussed by Ambrose Tomkins of Newark, after which John H. Rolfe of New Brunswick was asked to address the meeting.

Charles Warner, who attended the recent convention of the National Builders' Supply Association in Chicago, addressed the convention on behalf of the national organization. He said that delegates should be sent to the meetings of the National Association and that encouragement should be given to the efforts now being made for more thorough co-operation between the National and State organizations. An executive secretary had been appointed by the National Association, who would in the course of time visit every local association. He urged that this association would lend its support to the movement of building a greater and more powerful National organization.

ROCK PRODUCTS was the only trade paper represented, and its representative was granted every courtesy from the officers of the association. At the conclusion of Mr. Warner's speech the president asked the writer to address the meeting, which he did, briefly pointing out the attitude of this journal in promoting the policy, "Sell to dealers only."

At 5 o'clock the business session adjourned, and after a short intermission the entire attendance sat down to the bountiful banquet prepared by the committee on entertainment. An orchestra played the latest popular airs, and a feeling of good fellowship prevailed. At the conclusion of the feast the entire membership and their guests attended in a body a vaudeville performance at Keith's Theater.

THE ACTIVE MEMBERSHIP.

Garrison Coal, Lime and Cement Co., Atlantic City. G. P. Farmer Coal and Supply Co., Asbury Park. Buchanan & Smock Lumber Co., Asbury Park. Hopping & Ely, Atlantic Highlands. Consumers' Coal & Supply Co., Asbury Park. James Brady, Bayonne. Conkling Lumber Co., Basking Ridge. Ogden & Cadmus, Bloomfield. Henry Salmon & Sons, Boonton. J. G. Chamberlain, Bordentown. Edward Riggs, Jr., Burlington. L. D. Cook & Co., Bound Brook. John J. Demarest, Closter. Creskill Lumber Co., Creskill. Dover Lumber Co., Dover. The Park Union Lumber Co., Dover. T. F. & H. C. Sayre, Elizabeth. J. & S. S. Thompson, Elizabeth. Neureiter & Horre, Elizabeth. Mulford Coal and Lumber Co., Elizabeth. F. L. & A. Heidritter, Elizabethport. Tuttle Bros., Englewood. George H. Payson, Englewood. James T. Pierson & Co., East Orange. David Dumont, Far Hills. Ellis Tiger Co., Gladstone. Grantwood Lumber and Supply Co., Grantwood. Hackensack Coal and Lumber Co., Hackensack. Charles S. Shultz & Son, Hoboken. H. H. Vanderbilt, Hoboken. Jacob Vanderbilt, Hoboken. David Harper, Harrison. Van Keuren & Son, Harrison. Stone & Post, Irvington. Perrine & Buckelew, Jamesburg. J. P. Hall, Inc., Jersey City. Edward W. Conlon, Jersey City. Charles H. O'Neill, Jersey City. Washburn Bros., Jersey City. Est. T. S. R. Brown, Keyston. Edwards Coal and Lumber Co., Long Branch. Chandler & Maps, Long Branch. C. W. Ennis & Co., Morristown. Kenilvill Lumber and Store Co., Mine Hill. Joseph M. Smith Co., Madison. Green & Pierson, Madison. William O. Persons, Montclair. E. F. Carrabrant, Mendham. Wolf, Stewart & Co., Newark. Cook & Gennig Co., Newark. Henry E. Ogden, Newark. Marcus Sayre & Co., Newark. Tomkins Bros., Newark. Frederick Bowden, Newark. New Jersey Brick and Supply Co., Newark. John H. Rolfe, New Brunswick. P. M. Welsh, New Brunswick. E. G. Brown, Newfoundland. W. E. Chambers, Ogdensburg. S. M. Birch Lumber Co., Passaic. Anderson Lumber Co., Passaic. Campbell, Morrell & Co., Passaic. John Agnew, Paterson. The Thomas J. Brogan Co., Paterson. Martin Goble, Paterson. E. M. Rodrock, Paterson. H. M. Post, Paterson. A. H. Smith, Paterson. Boice, Kunyon & Co., Plainfield. J. D. Loizeaux Lumber Co., Plainfield. McDonough Bros., Plainfield. R. F. Oram & Co., Fort Oram. John V. D. Beckman, Princeton. Samuel Hall, Perth Amboy. Amos G. Bolton, Perth Amboy. The Farrington Co., Perth Amboy. Nickerson & Hopper, Ridgewood. Brewster & Son, Ridgewood Park. Isaac E. Hutton, Ridgewood. Edwin S. Voorhees, Rocky Hill.

Edwin T. Galloway, Rutherford. A. Z. Bogart & Bro., River Edge. T. B. Miller & Co., Summit. Stephens Bros., Summit. Sergeant Bros., Somerville. Smith-Schoonmaker Co., Somerville. H. B. Halsey & Co., South Orange. Clayton & Pierson, South River. E. L. Klotz, Singac. Edwin Demarest, Tenafly. J. B. Richardson & Son, Trenton. Osborne & Marsellis Co., Upper Montclair. Slayback Van Order Co., Verona. Kimball, Prince & Co., Vineland. Tuttle Bros., Westfield. W. D. Gulick, Washington. Thomas Henry, Weehawken.

THE ASSOCIATE MEMBERSHIP.

Homan & Puddington, New York City. J. B. King & Co., New York City. The Robinson Clay Product Co. of New York, New York City.

Rock Plaster Co., New York City. New York Cement Co., New York City. Clinton Metallic Paint Co., Clinton, N. J. Thomas A. Maguire, Ossining, N. Y. The Windsor Lime Co., Hamburg, N. J. The New Jersey Lime Co., Hamburg, N. J. The Whitehall Portland Cement Co., Philadelphia. Moses Shields Stone Co., Nicholson, Pa. Charles Warner & Co., Wilmington, Del. Atlas M. & M. Co., Lincoln, N. J. East Ohio Sewer Pipe Co., Irondale, Ohio. New Jersey Adamant Co., Harrison, N. J. Clermont Sewer Pipe Co., Clermont, Pa. Palmer Lime & Cement Co., New York City. Granite Clay Co., Mogadore, Ohio. Patton Clay Manufacturing Co., Patton, Pa. Hanover Brick Co., Whippoor. Shepard & Morse, New York City. Sackett Plaster Board Co., New York City. John B. Rose Co., New York City. Stetson, Cutler & Redman, New York City. Rockland-Rockport Lime Co., New York City. Blanchard Lumber Co., New York City. Newburgh Brick Co., Newburgh, N. Y. Penn-Allen Portland Cement Co., Allentown, Pa. Hiram & Son, New York City. J. M. Sutton, New York City. United States Gypsum Co., New York City. Horace B. Murdick & Co., New York City. Consolidated Rosendale Cement Co., New York City.

NOTES OF THE MEETING.

Secretary James M. Reilly was undoubtedly one of the busiest men in the State of New Jersey.

As a dancer at the feast Wolf Stewart of Newark has any oriental beauty looking like a fence-post.

President Walter C. Shultz doesn't make very much noise, but sometimes "actions speak louder than words."

Arthur E. White was on hand representing the Palmer Lime and Cement Company, of 149 Broadway, New York.

When the Newark *Morning Star* photographer got busy with the flashlight it certainly resembled a Black Hand demonstration.

John B. Wight, manager of the New York office of the Alpha Portland Cement Company, attended the sessions and the banquet too.

S. B. Simon, secretary and treasurer of the New Jersey Adamant Company of Newark, made many friends throughout the meeting.

Mr. J. M. Campbell of Campbell, Morrell & Co., Passaic, is like an electric battery—full of enthusiasm and able to impart it to others.

Treasurer Horace P. Cook has the executive ability which would fit him for the position of Secretary of the Treasury. He is another man who likes to work.

A. F. Gerstell, of the Alpha Portland Cement Company, may never have made a speech before, but no one could have discovered this, and we must take his word for it.

The Rockland-Rockport Lime Company had four representatives at the meeting—also at the banquet: W. E. Crooker, Allen J. Huke, Thomas Cummins and Charles W. Troxwell.

Harry Hobart, New York representative of the United States Gypsum Company, had a good time, and we saw him pay the price of associate membership for his company.

Before the meeting opened W. O. Anderson, representing the New Jersey Elastic Pulp Plaster Company of Trenton, walked forward and deposited his initiation fee with the secretary.

J. B. Vandever is now the New York representative of the Charles Warner Company, and has his office at 1 Madison Avenue. Somebody said he was living in "Club Row," wherever that is.

The dealers of Elizabeth were well represented. Among them were W. D. Stanford, representing J. & S. Thompson; R. G. Sayre, with F. F. & H. C. Sayre; Ed. Taylor, manager of the Mulford Coal and Lumber Company, and George Horre.

The co-operation of such men as Howard B. Green, manager of sales of the Whitehall Portland Cement Company, of Philadelphia, is of invaluable assistance to any building material association. Mr. Green is earnestness personified. C. P. Robinson, representing the same company, also attended the meeting.



A Busy Season Approaching.

With the closing days of this month and the approaching sunshine of April the building season will again show real activity, and every contractor who has plans and specifications will begin to place orders and ask for immediate delivery. First of all will be the foundation material, and its principal adjunct will be sand. Whether to be used in concrete or stone work, it must be suited for its purpose in order to get the best results. Time has gone by when almost any kind of sand would suffice for any sort of job. Science and experiments have taught builders to select sand with care.

This is a cement epoch, and in observing the process of concrete construction one realizes the important position sand occupies in this method of building, whether it be reinforced or the ordinary cement block. Whether your product is adaptable to concrete work, in any of its various forms, or whether it has particularly fine qualities for plastering, or whatever its best utility is, now is the time to get in touch with every possible user of your particular kind. There will be plenty of building this spring, in spite of the dark prospects earlier in the year, and the sand producer who gets busy now will be just as prosperous this season as any that has gone before.

Installing New Equipment.

PORTLAND, ME., March 10.—The Munjoy Gravel Company are installing machinery for their plant in this city. The entire equipment, including elevators and all other apparatus, was ordered from the Climax Crusher Company, Marathon, N. Y. The order was placed through their New England agent, A. B. Black, Boston, Mass. The capacity of the plant will be one hundred tons of gravel per day, and it will be one of the largest and best equipped plants in New England. The new concern will keep constantly on hand all of the different sizes of gravel used in various kinds of plaster and concrete work. Later in the season a crushing plant will be installed to convert the larger stones of the bank into different sizes of crushed rock used in road building and general concrete work.

Sand and Gravel for Tunnel Work.

ROCKFORD, ILL., March 10.—A representative of Jackson & Corbett, Chicago, contractors for the telephone and railway tunnel, was in the city recently, looking over the available sand and gravel pits. The gravel located on the tracts owned by Schmauss, Forbes & Brown was particularly to his liking from the quality of the material contained, and an offer was made to the owners for a large amount of the sand and gravel. They will be able to use forty cars a day in the making of concrete for the walls of the tunnels, and they find this quality very desirable for this kind of work.

The Atwood-Davis Sand Company, Beloit, Wis., are preparing to ship from twenty-five to fifty carloads of material from their sand and gravel pits to Chicago daily during the coming building season.

The Trinity and Brazos Valley Railroad have opened their large gravel pit near Waxahachie, Tex., and have begun gravel-ballasting the entire line. They have also installed a rock crusher near Mexia, Tex.

At a recent meeting of the County Commissioners at Bay City, Mich., the contract for supplying gravel for road construction for the coming year was awarded to the Campbell Gravel Company of that city at \$1.10 per cubic yard.

August Pfafflin and August Ruehman of Evansville, Ind., have sold their gravel pit at Emison, Ind., to the Terre Haute Sand and Gravel Company for the consideration of \$15,000. The pit covers an area of fifty-two acres and is located on the E. & T. H. Railroad.

The Great Western Power Company, Marysville, Cal., has contracted with a local sand concern for five carloads of sand per day until further notice, to be used in construction work on their new plant at Oroville. The sand is from Yuba River and is of the kind desired by cement-workers.

New Incorporations.

Philadelphia.—Schuylkill County Sand Company; capital, \$50,000; will deal in gravel, sand and other building materials. Incorporators: J. E. Sinecock, W. H. Mellon, T. A. Kuntz, J. C. Mellon.

Indianapolis.—Marion County Sand and Gravel Company; capital stock, \$1,000. Directors: William Clause, Province M. Pogue, C. H. Van Cleef.

Port Washington, N. Y.—Crescent Sand and Gravel Company; will mine, dig and quarry sand, marble, granite, etc.; capital, \$275,000. Incorporators: Lyndon R. Connett, Joseph N. Ely, Wheeler H. Peckham.

Philadelphia.—Hillcroft Gravel and Development Company; capital stock, \$125,000. Incorporators: F. W. Mills, William E. Allen, E. J. Forham.

Milwaukee, Wis.—City Gravel and Supply Company; capital stock, \$15,000. Incorporators: John T. Hoff, James O'Connor and James S. O'Neil.

Gravel Contracts Awarded.

BLUFFTON, IND., March 15.—The contracts for gravel for road repairs, etc., have just been awarded by the Board of County Commissioners. The C. B. & C. will deliver gravel at any crossroads ordered at 50 cents per cubic yard. Joseph Gregg will deliver it on the banks of his pit for 50 cents, and Isaac Roush will deliver it for 50 cents on the bank of the pit or sell it in the pit for 35 cents. C. C. Cole bid 50 cents on the pit bank and 40 cents in the pit. All of these bidders will furnish gravel at the points nearest their pits. Adam Hesher bid 40 cents for 1,000 yards, on the bank of his pit, but the commissioners could not accept this bid, because they do not need that much gravel in his vicinity.

Big Gravel Contract.

PEORIA, ILL., March 12.—A large force of men and teams, under charge of Mr. Turner, an interurban contractor, are stripping the gravel pit owned by William Evans. There is considerable dirt on the surface, and the work will continue some time. When completed about thirty-five feet of excellent gravel will be uncovered ready for use. Mr. Evans has a contract for fifty thousand carloads for the Illinois Traction Company.

ROOFING.

Joseph J. Lemfelder and David Hughes have formed a partnership and will engage in the general roofing and sheet metal business at La Crosse, Wis.

The reorganization of the Dickleman Roofing Manufacturing Company, Kenton, O., places the active management into the hands of Miss Lizzie Dickleman, former bookkeeper.

At a meeting held recently in Cincinnati forty sheet-iron and galvanized pipe manufacturers from a majority of the States east of the Mississippi River considered the organization of the National Conductor Pipe Association. A majority of those present were former members of the National Eave Trough and Pipe Association, which has not been active for several years.

David Stoddard, one of the large slate operators in the Bangor, Pen Argyl and Blue Mountain slate district of Pennsylvania, together with two associates, has bought the Cleveland Slate Company quarry, at Pen Argyl, Pa. The quarry will hereafter be known as the Albion Vein Slate Company, and will be operated by Mr. Stoddard and his associates. The Bangor-Hardy Slate Company of Pen Argyl, Pa., has leased from the new company the entire roofing slate product of the new quarry.

With the approach of spring there will be plenty of work along roofing lines. The severe winter weather, accompanied by quantities of snow, has had its effect on all kinds of roofs, and the owner who is wise will see to it that all damaged parts are repaired or entirely replaced with new. There are many and various kinds of roofing on the market, and the question first arises, what shall be the kind used? The old has stood service well, but has not lived up to its recommendation. It is well not to duplicate on this sort of material, and in casting about for one that will stand the test choose one that has real merit and one that can be backed by recommendations that are worth heeding. There are plenty of brands of good roofing that can be recommended without hesitancy, and it is these that will be called for this season and for seasons to come. This sort of merchandise is what brings back satisfied customers, not only in this line, but all other lines as well.



The Contractors' Supply and Equipment Company (Old Colony Building, Chicago) are still reaping the harvest of Geo. C. Marsh's recent South American trip. A number of reorders came in this week for Smith mixers and Symons crushers, one from Brazil, three from Buenos Ayres, and scattering orders from nearly all the South American republics. Their home orders for portable crushers are increasing from month to month.

The Raymond Concrete Pile Company of New York and Chicago has been awarded the contract for the concrete pile foundations for a baggage room and dormitory to be erected at Ellis Island, New York. The new structure will be on the main island of the group, and work on the foundations is under way. This is the fourth contract to be awarded the Raymond company at the immigrant station. Work was concluded only a short time ago on the concrete piling foundation which supports the new group of contagious diseases hospital buildings on Island No. 3. In the latter instance more than 1,500 Raymond concrete piles were placed.

The manufacturers of the Helm brick press are now placing on the market a one-man five-brick press, designed to meet the demand for a machine which would have the main features of the No. 5 Helm press, which has proven so popular, making the same quality of pressed brick but requiring a much smaller investment. This machine makes five brick at each operation. They are pressed face up, so that a dry facing and very wet body can be used.



Another claim for this machine is that an extra coarse aggregate can be used successfully in the body. These two points tend to secure a strong product with the minimum amount of cement. The machine compresses the material practically 1 1/2 inches. A hard, dense brick is the result. The machine has a capacity of 4,000 to 6,000 brick when operated by one man. There has been a large demand for pressed cement brick developed by the Helm press, and this new machine will do much to further the cement-brick industry. The price is within the reach of all. Printed matter can be secured by addressing the manufacturers, the Helm Brick Machine Company, 414 Bank Building, Traverse City, Mich.

The American Process Company (62-64 William Street, New York), manufacturers of dryers, continuous screw presses, cookers and digestors, claim for their direct heat rotary blast dryers that, being automatic, they require in their operation the minimum of labor. Being continuous in action, they effect a large saving in power. Heat being applied direct, they are economical in fuel consumption, and the largest possible evaporation is obtained from the fuel consumed. Their simplicity of construction assures the minimum of repairs. Adding to all this the low first cost at which these dryers are sold, and the user has an ideal proposition worthy of most careful consideration.

Somers Bros. of Urbana, Ill., have been very conservative in their claims for the Somers pressure block machine and for that reason they have created a most favorable impression wherever their machines were demonstrated. They claim for their machines a capacity of two blocks a minute. This seemed impossible to a gentleman at the Buffalo show, who promptly wagered that it could not be done. The demonstrators, thus put on their mettle, turned out blocks at the rate of four a minute. Somers Bros. announce that, notwithstanding the fact that the price of material has advanced, and although they have made additional improvements in the way of adding more face plates to their equipment, they have not advanced the price. They are now at work on a new catalogue, for which it will be well for readers of *ROCK PRODUCTS* who are interested to make early application.

The Brown Hoisting Machinery Company (Cleveland, O.) have just issued a new catalogue describing and illustrating the famous "Brownhoist" locomotive cranes with Brown patent grab buckets for handling coal, ore, sand, ashes, etc. There is nothing experimental about the "Brownhoist" equipment, as is shown by the illustrations from photographs of the cranes in actual operation and the list of some of the users, scattered through all the States and embracing some of the country's most important industries. The company, whose main office and works are at Cleveland, O., and who have branch offices at 26 Cortlandt Street, New York, and in the Frick Building, Pittsburg, will on request submit specifications and full data covering their cranes.

Hickson's steel molds for culverts, sewers, conduits, etc., manufactured by the Hickson's Sewer Mold Company, Mount Gilead, O., have these great points in their favor: They are simple in construction and easily manipulated. Joseph Hickson, the president of the company, is a dealer and manufacturer of cement products, and the secretary and treasurer of the company, Thad E. Burk, is a civil engineer and was formerly County Surveyor. They thoroughly tested the practicability of their patent before putting it on the market, and their success proves the soundness of their judgment when they backed these molds for general use. They publish an interesting pamphlet, which they send free on application and which should be in the hands of everyone interested in sewer building or road construction.

The Williams Patent Crusher and Pulverizer Company (works at St. Louis; sales office in the Old Colony Building, Chicago) have no cause for complaint. Among recent orders booked by them are the following: The Altoona Portland Cement Company, Altoona, Kan., will install Williams hammer crushers in the raw end of their plant, same to be shipped about May 15. The Monarch Portland Cement Company, Humboldt, Kan., will install Williams pulverizers in the raw end of their plant. The Ash Grove Portland Cement Company, Chanute, Kan., have installed Williams mills ahead of Fuller mills. The Dixie Portland Cement Company, South Pittsburg, Tenn., have installed seven Williams hammer crushers. The St. Louis Portland Cement Company, St. Louis, have just installed a No. 3 Williams Universal raw material grinder for tube mills feed, direct connected to a 75-horsepower motor with a flexible coupling, handling ten tons of 3-inch limestone per hour to 93 per cent (20 mesh), and 44 per cent (100 mesh), which makes an admirable tube mill feed.

The value of concrete as a building material has been fully recognized on the island of Porto Rico. Credit is due the Century Cement Machine Company of Rochester, N. Y., who, through their able representative, F. B. Hatch of San Juan, introduced the first concrete block machine on the island, and today have seventeen of their Hercules machines in active operation there. F. B. Hatch alone constructed in 1906 buildings costing over \$80,000, and among these a warehouse for the Porto Rican American Tobacco Company, 368 feet long. The Board of Education has recommended concrete blocks as made on Hercules machines, and, as a result, they are being used in the construction of all educational institutions throughout the island. There is also a wide field for street improvement. The Century Cement Machine Company recently placed in the city of Arecibo one of their outfits for making and laying combined curbing and gutter, and as a result Arturo Prado has the honor of laying the first concrete curbing and gutter ever seen in Porto Rico.

Recent improvements in the plant of the Edison Portland Cement Company at New Village, N. J., have increased the capacity until today the con-

cern is able to produce 8,000 barrels of Portland cement daily. The company has just issued an interesting book for distribution to the trade. It contains sixty-four pages, has for its introduction an interesting chapter concerning the founder of the company, Thomas A. Edison, and explains how Mr. Edison became interested in the manufacture of Portland cement and how he finally decided to build the large plant at New Village. The major portion of the book is taken up by full-page photographs showing the machinery and general equipment of the Edison Portland Cement Company's factories, and illustrations of various large contracts in which Edison Portland cement was used. Among these illustrations is one showing the huge crusher designed by Mr. Edison, which is capable of handling blocks of rock weighing from eight to ten tons. Another interesting feature in the equipment of the Edison Company's plant are the ten 150-foot kilns, the longest in existence. The large rolls which are used in the final process of crushing the raw material, and another set of which are used in crushing clinker, are shown in another picture. These rolls take the place of tube and ball mills used generally in cement plants, and were also designed by Mr. Edison. E. Meyer, the manager of sales, whose office is in the St. James Building, 1133 Broadway, New York, says that he will be glad to send a copy of the book to those who request it, provided they are interested in cement.

A Progressive Southern Plant.

ROCKMART, GA., March 15.—The leading enterprise of this part of the South is the Southern States Portland Cement Company. They employ more labor, put into circulation more money than any other concern in this district and solve the great and ever-present bread and butter question for a large proportion of this community. They have the latest in all lines of machinery, particularly in their motive power and packing and loading departments. Their plant is completely motor-driven and the electric installation at their powerhouse is not surpassed in the South. They have lately solved what proved one of their most perplexing problems by installing three Bates valve bag filling machines, and the cotton sacks now on hand at the plant are being changed to valve bags.

Not only has this new plan of packing solved the question of accurate weights and secure tying of cloth bags, but it has provided a paper bag that does not require tying at all, having two mechanically made bottoms instead of one bottom and one tied end.

Heretofore the cost of packing on a piece-work basis was 1½ cents per barrel for filling, tying and loading the sacks. The Bates system is being operated in the plant for one-half this cost per barrel,

and the laborers are making the same wages they did previously. Three men can average 900 barrels loaded in cars for a day's work. It has also greatly benefited the laborer by bettering conditions under which he works. The writer visited the packing department in black clothes without becoming covered with cement dust from the packing operations, which is not possible under the old plan of packing.

PORTSMOUTH, O., March 7.—A. M. Bates, the inventor of the Bates system for filling bags, is here installing one of his machines. A complete battery has been ordered by the York Portland Cement Company, and the entire product of their mill will hereafter be handled in the Bates patent valve bags.

The Emerson Pump.

The idea of raising water by the condensation of steam in a chamber and then forcing it up to a still higher level by the direct pressure of steam on the surface of this water in the same chamber, originated with Capt. Thomas Savery, who in 1698 patented his celebrated "fire engine." Properly speaking, his device was not an engine, but a sort of pump, a forerunner of the present Emerson steam pump, manufactured by the Emerson Steam Pump Company, Alexandria, Va. In operating Thomas Savery's engine one cylinder was filled with steam, the steam valve was closed by the operator, and a spray of water was then injected into the steam. The continual services of a man were needed to operate the steam valve and an almost continuous stream of water was delivered. A great sale was built up for this pump until Newcomen's atmospheric engine displaced it and piston pumps began to come into the field. The displacing of Savery's pump was largely due to the fact that the expansive power of the steam was wasted, and the steam consumption was hence enormous. No progress was made in vacuum steam pumps for nearly 200 years, when in 1872 and 1881 Charles Hall patented the Pulsometer. A saving of at least 25 per cent in the amount of fuel, one of the main advantages of the Emerson pump, is the result of early steam cutoff, which is made possible by the design of the rotary slide valve steam ports.

Where this type of pump is used in connection with excavation work, in cofferdams, caissons, quarries and mines, where the location of the pump must be frequently changed, both in a horizontal and a vertical direction, it has proved a wonderful advantage as a time saver. It needs but to be hung on a rope and does not have to be lined up on a firm, level foundation so as to accommodate any transmission belts, shafts or chain, as would be necessary in a centrifugal or the average reciprocating pump and its engine.

W. R. Emerson, vice-president, stated in a recent interview: "Our Standard pump will lift three times



BATES BAGGING MACHINES IN PLANT OF SOUTHERN STATES PORTLAND CEMENT COMPANY.

as much water as any other sinking pump of equal weight. It will pump three times as much water as any sinking pump that can be placed in the same space, and, furthermore, it can be had of a capacity four times as great as that of any other pattern of sinking pump."

Ballou's White Sand Company, Millington, Ill., announce that they have let the contract for a complete washing plant to be ready to operate May 1. This will enable them to furnish their excellent grade of silica sand thoroughly washed and screened through a $\frac{1}{4}$ " square screen, making the finished product absolutely fine and very clean. Their capacity will be about 250 tons per day.

The International Steam Pump Company, New York, announce that hereafter their general offices will be located at No. 115 Broadway, New York City. The repair shop will be located at No. 44 Trinity Place, where a full line of repair parts of the standard pumps of their manufacture will be kept constantly in stock. They will continue to furnish first-class workmen to care for emergency cases and will have an equipment of machine tools in their new shop sufficient to meet all demands.

John O'Laughlin announces that the demand for the John O'Laughlin screens has increased to such large proportions that, in order to handle the distribution more effectively for the convenience of the trade, he has made arrangements with the Johnston & Chapman Company, 1333 to 1345 Carroll Avenue, Chicago, for its manufacture and sale. This is an old and reliable firm known throughout the country as large manufacturers of perforated metals. All detail drawings and patterns of the screens as heretofore built are in possession of the Johnston & Chapman Company. Their experience and ability assure the best practical results to purchasers of these screens. They will give the business careful attention and furnish estimates and all information necessary for all requirements in the separation of granite, limestone, sand and gravel or any materials requiring separation.

The Coplay Cement Manufacturing Company (Pennsylvania Building, Philadelphia), manufacturers of Saylor's Portland cement, have just issued a handsome illustrated booklet showing some interesting views of notable structures erected with their product. Among them is an engraving from a photograph of the first cement houses built in the United States. They were erected for the use of employees of the Coplay Cement Company in 1880 under the personal supervision of David O. Saylor, the pioneer of the cement industry in this country. "Saylor's Portland" was used exclusively, of course. These houses are in perfect condition today, after twenty-eight years. Other notable structures shown are the Pierce automobile plant, Buffalo, showing process of construction, testing, etc.; the Broadway Warehouse Company's building, Cleveland; the Hotel Traymore, Atlantic City; the building of the Thomas Motor Car Company, Buffalo, and the bridge over Flushing Creek at Flushing, N. Y.

Under the head of "Captains of Industry" the Philadelphia Record recently published a deservedly complimentary biographical sketch of C. K. Williams, head of the great firm of C. K. Williams & Co., Easton, Pa., manufacturers of clays, talc, paper fillers, dry paint and paper colors, and favorably known to ROCK PRODUCTS readers in a special manner as the makers of brick and mortar coloring of all shades. At the age of twenty-two Mr. Williams engaged with his father, beginning with a limited capital, in the founding of the business. In 1906 the concern had grown to such an extent that it was found necessary to incorporate it under the name of C. K. Williams & Co., C. K. Williams becoming the president, secretary and general manager of an industry consisting of three complete and up-to-date plants located at Easton, with a fourth one located at Allentown and supplied with raw material from mines in various parts of Pennsylvania and other States, and drawing supplies from Canada, England, France, Italy, Turkey and Persia, with trade connections as wide as the world. In this gradual development of their great industry the company has absorbed as subsidiary concerns and is operating the Helios Dry Color and Chemical Company, and the Allentown Copperas Company, as well as the Easton Explosive Company, and the Papermakers' Chemical Company of Easton, both incorporated under the laws of the State of New Jersey.

METAL SLACK BARREL.

An Important Invention Which Enables Manufacturers to Recover the Full Cost of Packages and a Profit, While the Consumer Saves Money Also.

MUCH NEEDED AND LONG EXPECTED IMPROVEMENT.

The constantly advancing cost of wooden cooperage has made it impossible for consideration in connection with packages for many products where the barrel has for ages been considered the established standard carrier of commodities.

The average cost of ordinary wooden barrels fluctuates between 30 and 45 cents—always inclined to exceed the higher figure and certain to remain permanently at high and advancing prices. It is the ideal package as to size and economy of handling, but the first cost makes a heavy addition to the price of the net contents, and there is no possible rebate, for the wooden barrel can be used but once, as the



STEVE M. WRIGHT, MEMPHIS.
Inventor of the Metal Slack Barrel.

cost of returning empty barrels to the point of original shipment is prohibitive. Again, the second-hand wooden barrel is a very difficult commodity to dispose of for any appreciable part of its original cost. Consequently the barrel, which is the unit of measurement in the commercial world for nearly every material, has been unwillingly but necessarily discarded to a great extent and substitutes, in the shape of paper, cotton and jute bags, usually containing the quarter of a barrel, have come into general use.

In the cement, lime and plaster industries there is no feature today that is causing so much trouble, both to the manufacturer and to the dealer, as well as to every consumer, as the handling and rehandling, counting, packing, reshipping and repairing of cotton and jute sacks. Few dealers in building supplies have any definite idea of the enormous amount of money that manufacturers have invested in the aggregate of all the repairs and other expenses indispensable to giving proper credit for the return of the sacks. Invariably at the end of the season there are claims and counter-claims that have to be adjusted or compromised, and usually both parties to such controversies are dissatisfied. Probably no other source has been so prolific in losing steady customers for manufacturers.

For more than a year Steve M. Wright of the Wright Lime and Cement Company, Memphis, Tenn., himself a well-to-do and experienced dealer in building materials, has devoted his genius to the invention of a metallic barrel to simplify to the minimum all these package difficulties. It is constructed of movable parts, which can be nested together in quantities for economy in the reshipping of the emptied

barrels. When made of japanned iron (as shown in the accompanying illustrations) the Wright metallic barrel presents a very attractive package proposition from the standpoint of economy. It is estimated that these barrels will make at least fifteen round trips from the mill to the consumer at the minimum expense for return charges. Owing to the manner in which they nest, very small warehouse capacity is necessary to carry a large quantity of the barrels in stock. At the mill end the filling of one of these barrels will require less time and expense than the filling of four sacks. The barrel can be made for \$1 or less—the cost of a little more than two wooden barrels or four jute bags—but it must be remembered that such a barrel takes the place of fifteen packages at 40 cents each.

The plan of operation with the Wright metallic barrel will be for the manufacturer to charge cost, say \$1, to the dealer, and rebate at 90 cents for its return empty. At the end of fifteen trips upon each barrel the manufacturer has received \$1.50 for the package which cost him \$1.

Meanwhile the dealer has billed and rebated likewise to the consumer and has netted \$1.50, in addition to his profit, while the consumers who have used the barrels have paid out \$1.50 net for fifteen barrel packages. (Compare with fifteen wooden barrels at \$6.) This in addition to many other advantages, such as the protection of the goods while contained in strictly waterproof metal packages, besides the fact that it offers the manufacturer the opportunity to get the full price of the original package and a profit, while it saves the consumer money also.

These barrels are adaptable for all classes of goods where wood barrels have been employed in the past. They have a much greater resistance to breaking and crushing than the wooden barrel, and it is in every way an ideal package for the use of firms engaged in shipping bottles wrapped in straw or paper, such as beer, coca-cola, etc.

These barrels have been perfected in several distinct designs. One of these set up can be observed in Fig. 1. It consists of the two halves. At the base of the bottom half an overlapping bearing is provided, so that the upper half rests on the overlapping bearing, and the halves are bolted together with two bolts. The head of this barrel consists of a cap provided with interlocking eye lugs, so that the head is fastened firmly in place by simply setting three key bolts firmly in position. This barrel in the knocked down is shown in Fig. 2. Fig. 3 shows the barrel nested with the top and bottom sections and head ready for returning. This barrel No. 1 is designed for general purposes, such as cement, lime, plaster and all similar goods of a dry nature. It is also well adapted for produce, such as potatoes, apples and similar goods. It is also ideal for flour and cornmeal.

Note the rigidity of the package shown in Fig. 4, with the clamps drawing the bilge flange against the lugs at the upper head of the barrel. Fig. 5 shows the same barrel in the knockdown. The two parts are assembled by simply placing the upper half of the barrel upon the lower so that the turned rim rests upon the bearing plate of the bilge flange. The top head is then set in position and the four rods are threaded so as to draw the head and bilge flange together by tightening the nuts. In opening this barrel it is only necessary to have a wrench to unscrew the nuts at the head of the barrel, which allows the rods to fall away, and then to lift off the head.

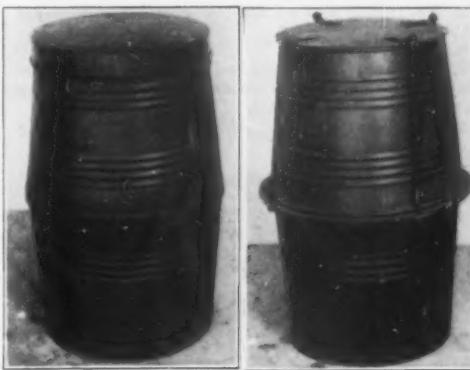


FIG. 1.

FIG. 4.

Fig. 4 shows a barrel especially designed for the use of paste, paints, putty, and paste used by paper-hangers, which require a very rigid barrel, and one that will not absorb and allow the contents to become dry, and it must be so constructed as to stand any weight that may be put in it. Fig. 5 is the

ROCK PRODUCTS



FIG. 2.

above barrel knocked down ready for nesting, same as shown in Fig. 3. Observe in the case of both these barrels the simplicity with which they can be nested, merely setting the smaller part inside the larger and building them up to the limit of weight for convenient handling. The nuts and rods, or bolts, as the case may be, can easily be wired together, as they are all interchangeable, so no loss whatever may occur.

Mr. Wright has been allowed a basic patent on his metallic slack barrel, as well as all of the improvements which have been found necessary for adapting it to the use of cement, lime and plaster manufacturers.

He has manufactured a number of these barrels and tested them in actual use by shipping 380 pounds of Portland cement to the barrel (402 pounds gross) without the use of any lining, and the barrels were returned with the contents in perfect condition after a ten days' railroad trip between Memphis and St. Louis. The barrels have also been shipped in the knockdown condition and nested for local freight handling as they would be in actual service. All the barrels so made and tested are in absolutely perfect condition at the present time, so that it is really impossible to say how much service these barrels will endure under ordinary circumstances; but the tests which have already been given them demonstrate that fifteen round trips may be counted on for each and every barrel, with the probability that 75 per cent of them would double this record, or make thirty round trips from the mill to the consumer. The barrels, being made of iron, japanned within and without, have a scrap-iron value after they are no longer useful as a barrel, which amounts to a considerable offset on the original price.

Mr. Wright has exhibited his metallic slack barrels to several parties interested in such economics, and it has been universally approved by all branches of trade. The classification authorities of the railroads are considering a very low freight classification for the return of the nested barrel parts.

The inventor, whose observations have been improved by fifteen years' continuous experience in the supply business, calls attention to the following points in favor of his metallic slack barrels:

1. Average weight, twenty pounds.
2. It has a greater crushing strength than wood.
3. It has a greater density and resistance when filled.
4. No staves to be broken.
5. No falling out of the head through improper cooperage.
6. No repairs at all.
7. In case of car crushing the barrels would possibly be mashed to some extent, but would not give way and lose the contents.
8. The doors or roof of car leaking, allowing



FIG. 3.

rain to fall on the barrel, would not affect the contents.

9. Could be shipped in any character of cars.
10. Any of the three parts of the barrel being damaged could be duplicated in part.
11. Any character of goods could be shipped in this barrel without danger of the elements.
12. No interference by rain while transferring from car to car or from car to warehouse.
13. In the event of fire no injury to contents unless the fire be sufficiently severe to melt the barrel.
14. To return for re-use, nested about 7 or 8 to 1.
15. The nesting of about 7 or 8 to 1 from the manufacturer to the consumer will require less cars to handle than if of wood.
16. Insurance would be less on such goods as lime and cement than if of wood.
17. Tonnage could be obtained more readily on vessels or boats than if of wood.
18. About 15 per cent less space than wood, owing to the thickness of wood.
19. May be packed with any class of goods and could be stored in the open if necessary.
20. The general barrel demand could be more readily supplied with the aid of this barrel.
21. Average time to cooper or uncooper, $\frac{1}{2}$ minute, without cost of consequence.
22. For paste, paints or putty, no leakage or absorption. A test on this item has been made which proved satisfactory.
23. It helps to eliminate the danger of exhausting the supply of wood for certain commercial purposes.
24. No danger in transportation filled or empty, such as jute sacks being torn or snagged.
25. Use of this barrel would have a tendency to reduce the price on other packages which now supply the market.



FIG. 5.

26. Can be made in any size desired.

Mr. Wright has not yet settled his plans for manufacturing or marketing these barrels, but knows that they can be made advantageously in extremely large quantities by steel stamping mills without the addition of any special machinery to the usual outfit of such plants.

With the opening of the present season the inventor expects to perfect a strong company or organization for offering this only barrel improvement in more than a century to the building material trade as well as other lines of barrel users. He invites correspondence of all parties interested in promoting this intelligent solution of the ever-present package problem, as well as those who appreciate the profitable opportunities contained in the manufacture of such an article. Address Steve M. Wright, 88-90-92 Hernando Street, Memphis, Tenn.

The H. B. Sackett Screen and Chute Company, 4212-26 State Street, Chicago, are advertising in this number of ROCK PRODUCTS a rotary dump concrete car, which will appeal at a glance to contractors, and others interested in the handling of materials. This is only one of their specialties. They issue a handsome 64-page catalogue which describes and illustrates their full line of coal baggers, bagging machines, patent extension angles, chutes, coal bags, galvanized and canvas baskets, wire cloth. "Roof-bestos" roofing, coal elevators and conveyors, revolving screens, coal breakers, special coal mining appliances, automatic steel dump cars, wheelbarrows, coal and coke forks, scoops, shovels and car pushers, canvas goods, etc. They are prepared to figure on special work of all kinds, including conveying and elevating machinery, and all styles of mine cars, buckets, revolving screens, etc. They invite correspondence and we advise the readers of ROCK PRODUCTS to communicate with them concerning any special wants in their particular lines.

Clay Working Machinery
Yard Supplies of all Kinds
CEMENT MIXERS
ELEVATORS
CONVEYORS
DRY PANS
CRUSHERS
BARROWS AND TRUCKS
Steam or Animal Power
Brick Machinery

"MARTIN"
DRAWER 557
LANCASTER, PA.

**Peirce
City
White
Lime**



\$75 HAND POWER CONCRETE MIXER
14 Year Old Boy Can Operate It
Send for free booklet "True Concrete"
Sidewalk or Blockmakers
S. RONSON MACHINERY CO.
Room 10, 806 Chestnut St., St. Louis, Mo.

**W. D. MEYER,
Manufacturer of
Marble White Lime**
115 Delaware Street, QUINCY, ILL.

**YOU LOSE
MONEY**

Each Day You
Do Not Operate
This Machine

HOW?

By not making
pressed cement
brick, by using
more labor and
cement than this
press re-
quires, or
by losing
trade
through
inferior
quality
of
brick.



**THIS HITS YOU
IT CAN'T MISS**
Better look into
it right NOW

Ask for
Bulletin "11"

Here is a piece of reliable, durably built machinery, 700 pounds of iron and steel, perfectly machined and assembled, built for long, hard usage. It makes hard, fine finished, strong, cornered, sharp edged brick. Makes them fast, 3 to 6 M daily one man, and he must press them just as hard when you're not looking or when he's tired—not so with tamping. No failures here and the price is lower than ever.

Helm Brick Machine Co.
415 Bank Bldg., Traverse City, Mich.

Free Bulletins
A-2 2-piece pressed
stems.
B-2 Fall-down blocks.
C-2 Fixers.
D-2 Ornamental and
sill moulds.
E-2 Burial Vaults and
grave moulds.

CLASSIFIED ADVERTISEMENTS

Advertisements will be inserted in this section at the following rates:

For one insertion 25 cents a line
For two insertions 50 cents a line
For three insertions 60 cents a line

Eight words of ordinary length make one line.
Heading counts as two lines.

No display except the headings can be admitted.

Remittances should accompany the order. No extra charges for copies of paper containing the advertisement.

EMPLOYEES WANTED

MANAGER OF EXPERIENCE

desired. One who has made a success of the sand-lime brick business and who is willing to invest in the company under right conditions.

THE MICHIGAN PRESSED BRICK CO., Detroit, Mich.

QUARRY FOREMAN.

Must be expert in drilling and blasting, and thoroughly familiar with all outside work at crushing plant. State lowest salary and give references. Address

G. 4, care ROCK PRODUCTS.

QUARRY SUPERINTENDENT.

Young, energetic engineer experienced in quarry and crusher work wanted to take charge of large quarry with 1,500 tons daily capacity; married man preferred.

ST. LOUIS PORTLAND CEMENT CO., St. Louis, Mo.

EMPLOYMENT WANTED

POSITION AS SUPERINTENDENT

of crushed stone plant wanted. Reliable, experienced and thoroughly competent man.

Address BOX 11, care ROCK PRODUCTS.

BUSINESS OPPORTUNITIES

FINE LIME PROPERTY.

8 1/2 acres, 2 acres now open. Two crushers, 525 tons daily capacity; lime kilns, two hoists, two boilers and two engines. To a competent lime man with small amount of capital this is an exceptional opportunity to make money.

R. K. COWAN, County Bldg., London, Ont.

Jamestown Paint and Varnish Co.

JAMESTOWN, MERCER COUNTY, PA.

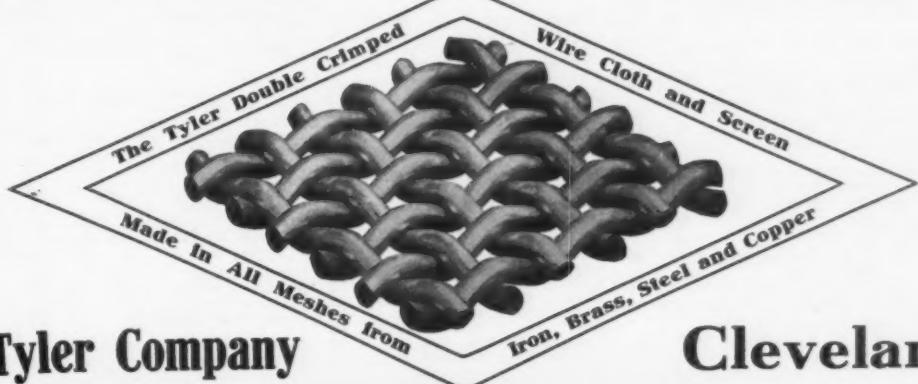
Manufacturing specialists of

Chocolate Mortar

Color (not good for fudge). One carload will color mortar for 1,000,000 brick. Get busy.

We also have some DOUBLE STRENGTH BLACK up our sleeve. A postal card will do.

The Tyler Screen is especially recommended for screening stone, sand, gravel, cement, lime, etc. It will stand extraordinary wear.



The W. S. Tyler Company

ROCK PRODUCTS

FOR SALE OR LEASE.

One of the best standstone quarries in southern Ohio. 52 acres, with residence, ample R. R. tracks, unlimited material for bridge and building stone, shale, brick, sand-lime brick, concrete blocks, etc. Steam machinery. About 80 miles from Columbus, Springfield, Dayton and Cincinnati. For full particulars address

C. W. RISLEY, Lima, O.

MACHINERY FOR SALE

BARGAINS IN SECOND HAND MACHINERY.

1—No. 1 Style "D" Gates Gyrotary Crusher.
1—No. 3 Style "D" Gates Gyrotary Crusher.
6—Rock Drills, all sizes.
Boilers and Engines, all sizes.

Write us your wants.
THE BROWN MACHINERY CO.,
941 N. Main St., St. Louis, Mo.

CRUSHER FOR SALE.

Gates No. 4 Gyrotary, in fine condition. Cheap.
R. P., BOX 2, Sta. A., Cincinnati, O.

FOR SALE CHEAP.

One new Day Plaster Mixer, half ton size. Three small sand dryers.

J. E. BARTLETT CO.,
Jackson, Mich.

ENGINES AND BOILERS FOR SALE.

Engines—Corliss, Automatic and Throttling, all sizes from 1 to 500 H. P.
Boilers—Horizontal, Portable and Vertical, all sizes from 1 to 200 H. P.
Pumps, Heaters, Tanks, Sawmill and General Machinery.

Write for our prices on your requirements.
THE RANDLE MACHINERY CO.,
1745 Powers St., Cincinnati, O.

FOR SALE.

No. 9 Gates, Style K crusher (new).....	\$6,250
No. 5 Gates, Style K crusher.....	950
No. 3 Gates, Style D crusher.....	475
Standard gauge 5-ton locomotive crane.....	3,000
Mundy 6 1/2 x 12 double drum hoist.....	675
Mundy 6 1/2 x 10 double drum hoist.....	625
Lidgerwood No. 72 double drum hoist.....	800
Little Giant traction steam shovel.....	2,850
Bucyrus 65-ton steam shovel.....	5,000
Air compressors, drills, concrete mixers, cableways, cars, locomotives, rails, etc.	

WILLIS SHAW, 171 La Salle St., Chicago.

COMPRESSOR, DRILL, ETC.

One 540 ft. McKernan compressor.
Two 3 1/2 ft. McKernan drills.
One No. 4 Austin crusher with elevator, boiler and engine.
EDWARD HELY, Cape Girardeau, Mo.

FOR SALE.

20-ton overhead traveler, 38-foot span; electric power or rope drive. 135 feet track; strictly first-class. Also 20-ton stiff leg stone yard and quarry derrick, Scoville make. 50-foot boom, double engines on mast, revolves full circle either direction. Fine condition.

WILLIS SHAW, 171 La Salle St., Chicago.

PLANT FOR SALE

LIME KILNS, EQUIPMENT

and quarry for sale. For particulars address
CLEARWATER LIME CO., LTD.,
Orofino, Ida.

BLUE LIMESTONE QUARRY.

Eighty acres patented, rich in lime, 98 1/2 per cent calcium carbonate. First-class location for an up-to-date plant. One large building. The grading for side-tracks completed. Northern Pacific Railroad running directly through the property. The demand for lime is great; a fine opportunity for one acquainted with the lime business. For further particulars, address
B. F. FORBES,
Box 207, Boulder, Jefferson Co., Mont.

ENTIRE CRUSHING OUTFIT

for sale in good condition and but slightly used; capacity about 450 tons per day. Will sell intact or will dismantle and load on cars as a whole or in part:

1 No. 12 "Acme" Jaw Crusher.
1 No. 92 "Acme" Jaw Crusher.
1 No. 4 "Austin" Gyrotary Crusher and necessary accessories.

Full details given upon application.
Address J. X., care ROCK PRODUCTS.

FIRE AND VITRIFIED BRICK CLAY.

For Sale—408-acre tract adjoining \$300,000 plant of Georgia Vitrified Brick Co., Campania, Ga. Inexhaustible supplies finest quality for fire or vitrified brick manufacture. Fire clay best known to experts in the great clay country between Augusta, Macon and Atlanta, Ga. R. R. through property. Owner unable to develop. Price \$15,000, a fraction of its value.
H. C. MIDDLETON, Broker, Augusta, Ga.

The
COLOR
That Never Fades.

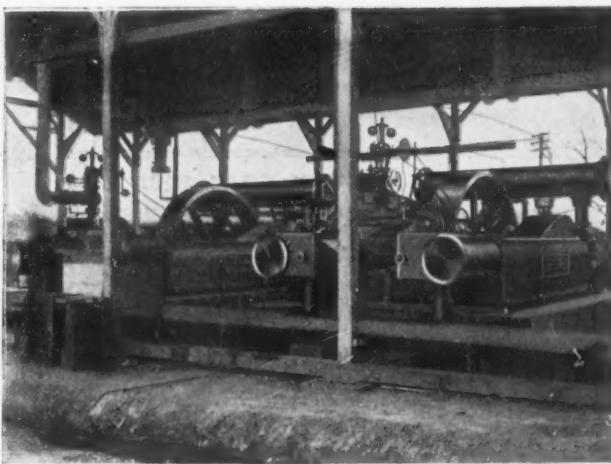
Tried out for 20 years. For Mortar, Brick, Cement, Stone, etc. Red, Brown, Buff, Purple and Black.

Rickeston Mineral Paint Works,
MILWAUKEE, WIS.

If you wish some clear, concise data on screens and their uses, send for catalogue "R. P." today.

Cleveland, Ohio

"IMPERIAL" TYPE TEN AIR COMPRESSORS



Two of Nine "Imperial" Type Ten Compressors on the Panama Canal
210 Ingersoll-Rand Rock Drills are also used on the canal.

In the "Imperial Type Ten" Compressor the self-contained, self-supporting features, the "unit" quality, the simplicity and ease of management of the straight line type are secured in combination with all the duplex advantages. No design gives such a large air capacity in so small a floor space. A distinctive feature is the lubrication—a "bath" system which floods all bearings with oil, returning the oil to be used again. Reciprocating parts are wholly enclosed, resulting in a very cleanly machine and excluding all dust and dirt. The "Imperial" is a machine from which high-class results are returned under all conditions.

ROCK DRILLS CHANNELERS AIR TOOLS

INGERSOLL-RAND CO.

R37

Join Our Aggressive Publicity Campaign.
This Space Would Help
SOME

THE FULLER ENGINEERING CO.
DESIGNING AND CONSTRUCTING ENGINEERS
ANALYTICAL CHEMISTS
CEMENT MILLS A SPECIALTY
OFFICES: ALLENTOWN NAT. BANK BLDG. ALLENTOWN, PA.

BERKSHIRE WHITE PORTLAND CEMENT COMPANY

21 Park Row, New York City

ABSOLUTELY TRUE PORTLAND: PURE WHITE

A Segment of Quality

Over 700,000 Square feet floors laid with Berkshire "Snow White" Portland Cement. Specified in all work where QUALITY is essential.

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Tell 'em you saw it in Rock PRODUCTS.

Amatite on Lumber Shed of
A. B. Cramer Company,
Suffolk, Va.

Amatite

TRADE **B** MARK

ROOFING

It Needs No Paint!

MOST ready roofings require a certain amount of repairs and painting every season or two in order to keep them free from leaks.

This expense is now unnecessary. With an Amatite roof it is cut out entirely.

Paint offers only temporary protection at best. Every few years it must be renewed. When you buy a roofing that requires painting you are really buying two articles — roofing and paint — to do the work that Amatite can do alone.

Amatite has a real mineral surface. This top surface will withstand the severest kind of weather for many years and insures an amount of protection to your buildings that no other ready roofing can offer. Beneath this mineral surface are double layers of Felt and Coal Tar Pitch — the same waterproofing that is used by the United States Government at West Point, at some of the Navy Yards, at the New York Custom House, and

many other such buildings. It is the greatest waterproofing material known and you are sure of getting it only when you buy Amatite.

With Amatite once on your buildings you do not have to bother with painting and coating. This is necessary with all smooth surfaced roofings, but with Amatite that expense and trouble are entirely done away with.

Although it has so many points of superiority, its cost is no more than the usual run of roofings; in fact, in many cases it is lower.

Is it any wonder that last year we were unable to supply the demand for Amatite?

FREE SAMPLE

Let us send you a free Sample and Booklet which tells the story in detail and shows photographs of buildings in many sections of the country which depend on Amatite for their protection against storms and weather.



Fac-simile of
Amatite Roll

BARRETT MANUFACTURING COMPANY

New York Chicago
Kansas City

Philadelphia
Minneapolis

St. Louis
New Orleans

Cleveland
Boston

Allegheny
London, Eng.

Cincinnati

PATENT SOAPSTONE FINISH

PLAIN AND IN COLORS FOR WALLS AND CEILINGS

Patent Soapstone Mortar

Prepared in any Color for Laying Pressed and Enamede Brick, Stone Fronts, Terra Cotta, Chimneys, Fire Places, Etc.

The Dodge Blackboard Material or Artificial Slate.

The Potter Blackboard Material.

SOAPSTONE MICA. CONCRETE DRESSING
CRUSHED, GROUND AND BOLTED SOAPSTONE.

AMERICAN SOAPSTONE FINISH CO
DODGE, Proprietor. CHESTER DEPOT, VT

S A N D

HAVING completed our new plant we are now prepared to ship cleaned and dried sand especially adapted for foundry use and concrete work.

No order too large for us.

Illinois Valley Sand Co.
OTTAWA, ILL.

Clean White Sand

Just the right thing for molding artistic concrete work of all kinds. Pure silica as white as snow that will produce a white product for ornamental exterior and interior concrete finish. The perfectly practical facing material that has never been obtainable before. Quantity unlimited, price reasonable.

SHIPPING FACILITIES UNSURPASSED.

Ballou's White Sand Company

Box 8.

Millington, Illinois



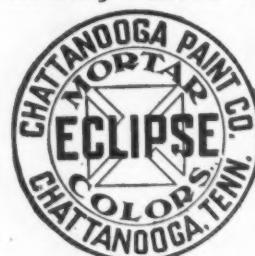
**Timber
Hangers**
**ANCHOR
STRAPS**

For Wood, Steel or Concrete Construction. Special Hangers to suit any conditions.

CHAS. MULVEY MFG. CO.

1331, 35th Street, :: CHICAGO, ILL.

Red, Brown, Buff and Black



**MORTAR
COLORS**

The Strongest and
Most Economical
in the Market.

Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

CHATTANOOGA PAINT CO.
Chattanooga, Tennessee



Tell 'em you saw it in ROCK PRODUCTS.



CONTRACTORS ROTARY DUMP CONCRETE CAR

This is only one of our specialties. We manufacture CARS for Concrete Gravel, Sand, Stone, Brick. Also all kinds of ELEVATOR BUCKETS, ELEVATORS, SCREENS, BOTTOM DUMP BUCKETS.

If you need any of the above write us for prices; we can quote you the lowest and give you A No. 1 goods.

H. B. Sackett Screen & Chute Company

4212-4226 State Street, :: :: CHICAGO

IT WILL PAY YOU TO USE The Jaite Paper Sacks

FOR

CEMENT, LIME AND PLASTER

Embodies

Strength

and

Flexibility

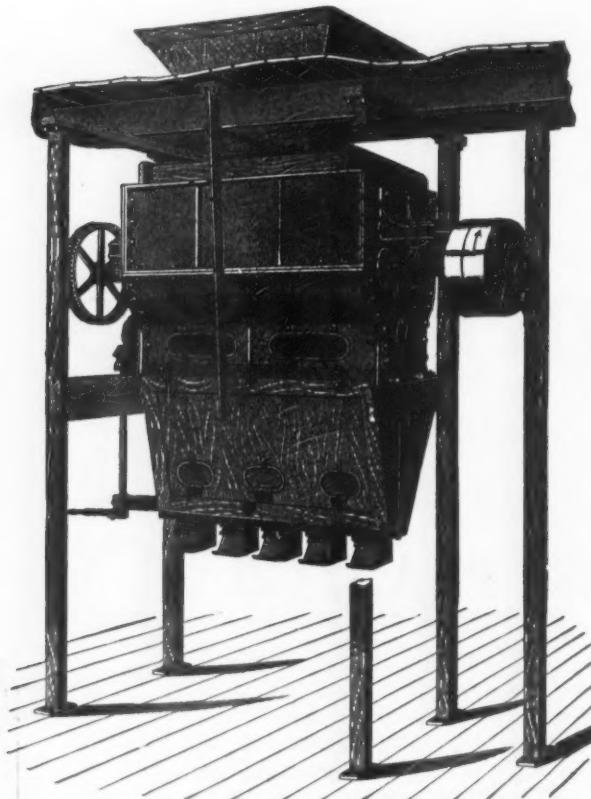
**Does not become hard and brittle---as it is made
right from start to finish.**

**Always has that LEATHERY FEEL which makes
it easy to tie.**

**We solicit your orders, knowing that once a cus-
tomer, always a customer, would be the rule.**

The Jaite Company

Boston, Summit County, Ohio



The most thorough and efficient
Mixers of Plaster, Cement and
Dry Materials. Send for Circular.

W. D. DUNNING, Water St., Syracuse, N. Y.



The P. B. Miles Mfg. Co. Inc. 130 W. Courtland St., Jackson, Mich.

**The Noble Cement Mill
FOR
Pulverizing**



Lumpy Cement is the Cement
users friend

It makes it as soft and fluffy
as sifted flour

Noble Concrete Machinery Co.
West Freemont St.
Fostoria, Ohio

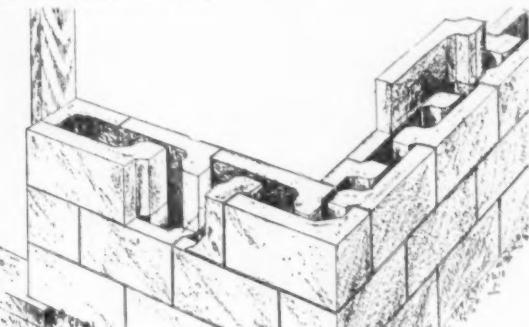
The THOMAS SYSTEM CONCRETE, STONE AND INSULATED WALLS

Here is OUR CLAIM

There are Four Things absolutely necessary in a concrete wall—
viz: **Moisture Proof** } OF THESE QUALITIES SOME OTHER METHODS OFFER **ONE**
STRONG } **SOME MAY HAVE** **TWO**
BEAUTIFUL } **SOME EVEN POSSESS** **THREE**
INEXPENSIVE } **THE THOMAS SYSTEM** alone combines **ALL FOUR**

Look of any One is FATAL

Put us to the test! We guarantee our system of Concrete Blocks and Walls to be the Best in the World.



SEE THAT
AIR
SPACE

Strong as a
Solid
Wall

HERE IS THE PROOF!

The owner of this building had already constructed the lower story of one-piece blocks of a well known make, when he decided to finish with the Thomas system. The cut shows the difference between the dead, mud color of the first story and the live, gray, slightly mottled effect, which gives a Thomas wall all the charm of the finest cut stone structures.



This Letter Tells The Story

A. O. THOMAS, Dear Sir:—

Alexandria, Neb., April 10, 1906
I built, last summer, a building 40x30 feet, two stories high, using the ordinary one-piece hollow block for the lower story. For the upper story I used the Thomas Block and System. The rain of the building plants toward the back end, and before putting up the eaves spouting a heavy rain occurred, the water discharging directly upon the back wall of the building, thoroughly soaking the lower story wall so that the plastering was softened and badly discolored, and remained so for a long time. No trace of moisture appeared on the walls of the upper story where your two-piece block was used, which demonstrates the fact that the one-piece block will carry water from the outside to the inside of the wall, and that a wall of your two-piece block is waterproof. The front block is placed on the inside of the wall made with the one-piece block, no trace of it appearing where the two-piece block was used. The blocks in both stories were made smooth, and the same proportion of cement used in each.

Yours truly, E. N. AVERILL.

We will ship our Complete Outfit on 60 days' trial to the first party ordering same in any town. WRITE FOR PROSPECTUS

Address Dept. 2

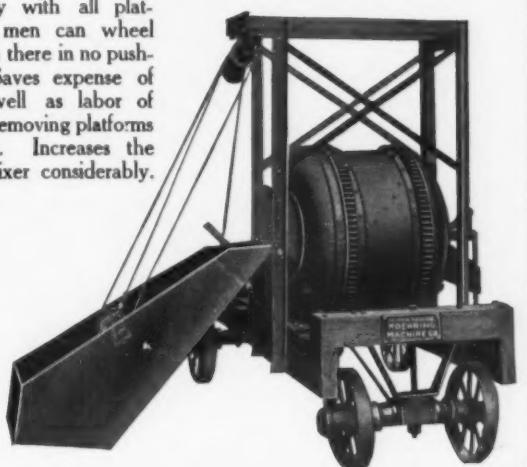
Thomas Cement Construction Co., Joliet, Illinois

KOEHRING MIXER

Equipped with Automatic Charging Bucket

Does away with all platforms. The men can wheel larger loads as there is no pushing up hill. Saves expense of lumber as well as labor of erecting and removing platforms and runways. Increases the capacity of mixer considerably.

Write for
Catalog "F"



SELLING AGENCIES

CHICAGO BUILDERS SPECIALTIES CO.
1118 Chamber of Commerce Bldg., Chicago, Ill.
EDW. SCHENK
404 House Bldg., Pittsburgh, Pa.

**KOEHRING MACHINE CO., Mfrs.,
Milwaukee, Wis.**

YOU

Can produce this or any of many other different designs of **Concrete Porch Columns**, all beautiful, by using

SIMPSON MOLDS
We Guarantee This

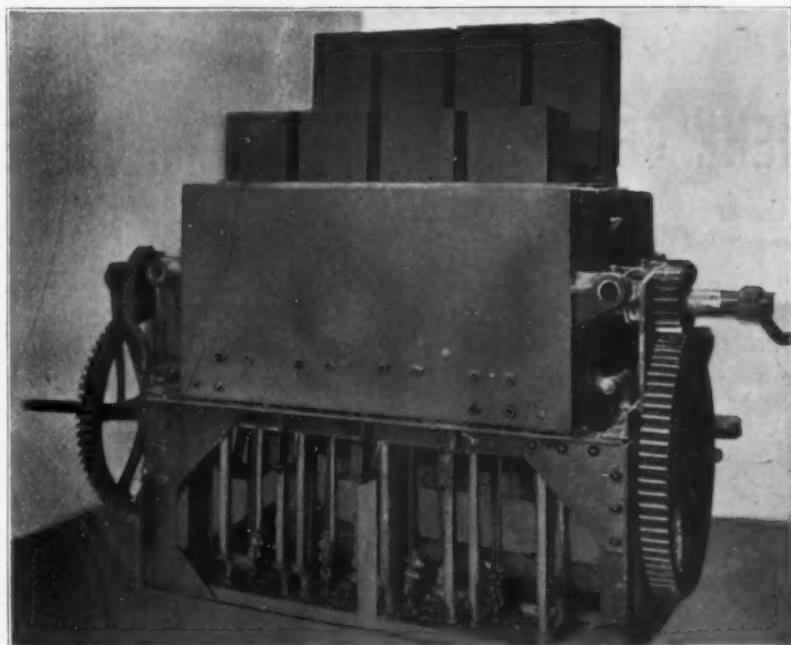


Write us for full
particulars, with
illustrations and let-
ters from block
makers and house
owners. :: ::

The Simpson Cement Mold Co.

498 North High Street
COLUMBUS, :: :: :: OHIO

FIREPROOF STRUCTURAL TILE



400 Tiles per Day With Three Men.

Any shape and size required, are successfully and profitably produced wherever sand, ground rock, furnace clay or other concrete aggregates are obtainable, using any standard quick setting Portland cement.

Concrete Partition Blocks, Conduits and Sewer Pipe are made with big profit even in a small one machine shop.

Supply dealers can equip a small plant right in their yard and turn sand and gravel into high priced building materials.

TILE MACHINE SOLD ON DEMONSTRATION GUARANTEE

To thoroughly demonstrate the guarantee which we make to parties ordering the machine we make the following offer: We will install on approval for responsible parties paying freight an eight-tile machine, at our risk, under the following conditions: The parties ordering are to furnish steam, the pay of the three men operating the machine and the required material, quick-setting Portland cement and suitable aggregate. We will then, without the use of any other machinery, turn out 400 perfect tiles per day. All our claims being established in this way, the sale of the machine becomes complete, and purchasers on their part agree to purchase from us such other machines and equipment as their market requirements call for. If we fail in any way to make good our claims, the machine is to be returned.

The Merit of the Material Speaks for Itself.

If you own a sand supply, crusher refuse or furnace slag is handy—investigate for factory propositions.

CONCRETE STONE AND SAND CO.

A. A. PAULY, INVENTOR.

Eminent Engineers and Architects indorse the Pauly System of Concrete Tiles and Pipes. Here is where dealers can get "all the profit."

Youngstown, Ohio

Tell 'em you saw it in ROCK PRODUCTS.

NEW SYSTEM OF SEWER CONSTRUCTION

Steel Centers and
Formers for building
Concrete Culverts,
sewers and other hollow
structures in their per-
manent location.
By the use of these
units, no lumber is re-
quired for forms.
The walls of the sewer
are made uniform.
The back filling is
carried on as the work
progresses.
The centers and
formers are easily set
up and quickly removed
when the concrete is set.
There is a saving of
concrete.
This will save the con-
tractor, time and money.
A little booklet will
tell you all about them.
Write for it. Address

HICKSON'S
Sewer Mold Co.,
Mt. Gilead, Ohio

**Spade System for Finishing
Concrete Wall**

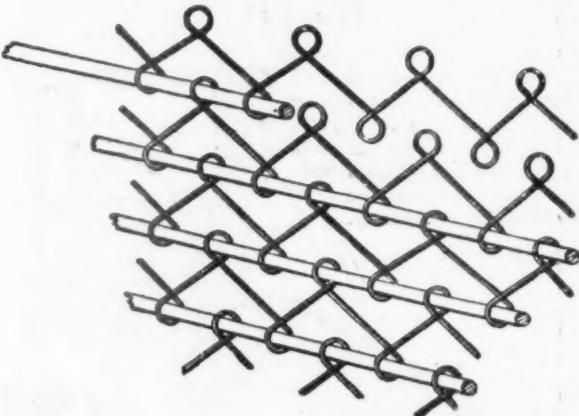
The Vaughan patent "concrete" spade is used as a finishing tool, by means of which the concrete mass can be separated while in the form, the finer portion being caused to flow toward the side of the form, so as to give a more complete finish to the surface than would otherwise be presented. The spade is perforated so as to give the best possible results.

Write for Prices and Particulars.

Any practical concrete worker can make it pay for it-
self in a day.

Concrete Spade Mfg. Company
123 South Clinton St. CHICAGO, ILL.

Patented
Jan. 22, 1907

Mankedick's**Reinforced Concrete Structure**

Adaptable to all possible forms of construction, such as
Arches, Columns, Silos, Floors or Walls. Uniform strength
in every position. Any desired size of rods, wire or mesh
may be used that may be necessary for the work required.

Rapid, Cheap and Simple Construction

This Patent is for sale. If not sold soon I will make
arrangements to have the material manufactured for the
market.

CHAS. MANKEDICK, Patentee,
P. O. Box 397. **SULLIVAN, INDIANA**

**"IT PAYS TO INVEST"****THE
SCHENK CEMENT DRAIN TILE MACHINE**

Is the opening wedge for a
successful business, it pays
you big interest, and profits
and is a money-making
proposition. Why not use
the wedge?

Makes 3M to 4M 4", 5", 6",
7", 8", 10" and 12" tile in 10
hours with six men and a
ten Horse Power engine.
It also makes 14", 15" and
16" tile. "It's a wonder."

LET US HEAR FROM YOU.**THE PERFECTION CONCRETE MIXER**

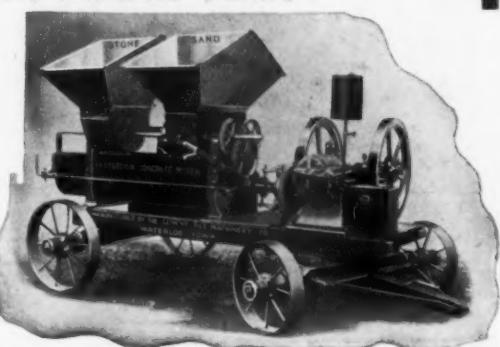
Gives you a thorough mix, and in fact has all the merits that is possible to
give a mixer. Catalog on request.

THE CEMENT TILE MACHINERY CO.

The Largest Manufacturers of Cement Working Machinery in the World.

22 Roth Street

WATERLOO, IOWA, U. S. A.



Tell 'em you saw it in **ROCK PRODUCTS**.

Somers' Pressure Block Machine



You are looking for the machine that will make you the most money. Our sales are principally to persons who have started into the business and have learned just enough about the great possibilities of the block business to be convinced that if they can get a machine that is speedy and at the same time one that will make any block the architect may call for, their financial success is assured.

The Somers' Machine will do it. 3 cents saved in labor on every block because of its great speed. Two machines operated successfully under one Press, thereby doubling the capacity. Operated automatically by levers. More moderate in price than the common Hand Tamp outfits. Write for our Catalogue and prices.

Somers Bros., Manufacturers

205 North Coler Ave., - Urbana, Ill.

The Use of Wet Material combined with great Speed of Operation

is what every cement worker has wanted. It is found in only one machine.

The Besser Face Down

The only block machine which withdraws the cores vertically and automatically. Every block perfect. None sag. Adjustable instantly for all lengths, widths and heights. Designs and shapes unlimited. One size pallet, fewer movements. Less tamping, less cement, waterproof blocks, bigger profits. The first perfect block machine. We make perfect block, brick, mixing machines of all kinds and at all prices. Brick machines with capacity up to 15,000 per day. We are specialists in

Cement Tile Machinery

which offers 100% profits.

Our Automatic Tamper Tile Machine

makes drain tile for \$8.00 per M, which sell for \$15.00 to \$20.00. Capacity 2,000 to 10,000 tile per day. Work easy. Machine simple and everlasting.

Our Tile Molds

in all sizes up to 48 inches will pay for themselves in a day. Besser has machines for every purpose. They are in use everywhere and give you all the profits. We prove every claim by our customers.

Send for free literature and 25 cents for big catalogue and instruction book.

THE BESSER MFG. CO.

903 8th Street, Alpena, Mich.

Makers of the Most Complete Line of Concrete Machinery

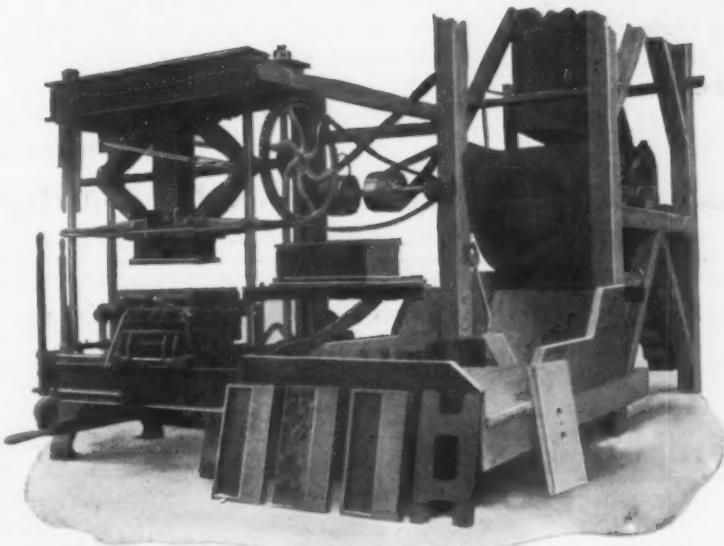
PERFECTION AT LAST ATTAINED IN THE CONCRETE BLOCK INDUSTRY

THE PERFECTION POWER BLOCK MACHINE is the only Power Block Machine on the market, making a Hollow Concrete Building Block under Heavy Pressure and at Great Speed.

Machines have been in constant use since July 1st, 1905, with practically no expense for repairs.

The machine handles sand, gravel, crushed rock, slag and coloring materials perfectly.

All materials accurately measured, thoroughly mixed and uniformly pressed under 200,000 pounds pressure.



Makes 8, 9 and 12x8x24 inch blocks in five faces, and fractional and angle blocks.

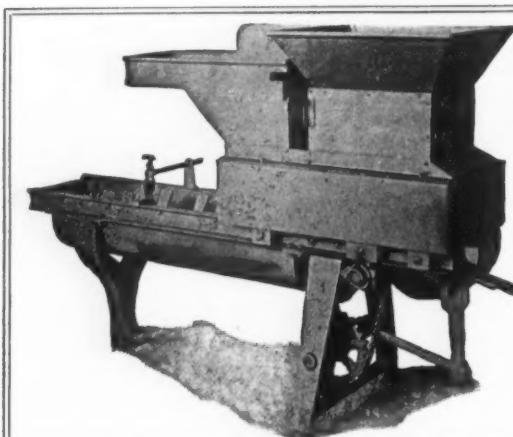
Machine can be arranged to make Two Piece and Faced Blocks if desired.

All machines delivered, set up and put in operation to show a guaranteed capacity of 60 blocks (12x8x24 inch) per hour with 5 men.

Blocks perfectly cured in 24 hours in Vapor Curing Kilns of our own design.

Full details, catalog, testimonials, etc., sent upon request.

THE PERFECTION BLOCK MACHINE CO.
KASOTA BUILDING :: MINNEAPOLIS, MINN.



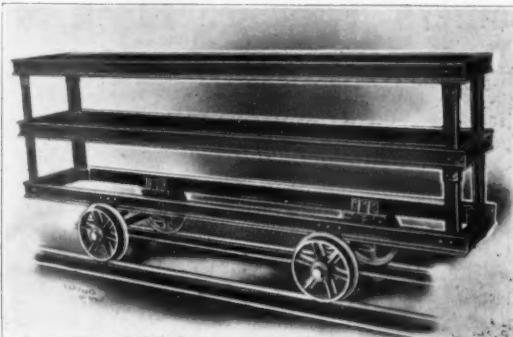
"KENT" CONTINUOUS MIXER

"The Mixer that measures and Mixes"

"You fill the Hopper the Mixer does the rest"

Simple, reliable, economical, durable and moderate in price

Write for Catalogue and Prices to
The Kent Machine Co.
 306 N. Water St., Kent, O.



The "KENT" Block Cars, Transfer Cars, etc.



X-L-ALL CEMENT CART

Cement Workers who want increased profits will find this cart the greatest aid. It saves labor and time. It absolutely prevents waste of cement as handled in barrels or sacks.

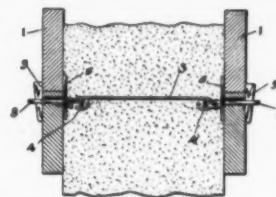
Buy one and increase your profit.
 We manufacture a complete line of cement working machinery. Write for catalog.

BURRELL MFG. CO., 102nd Grove St., Bradley, Ills.

New Type of Wall Form

Investigate this new system; boards held firmly while concrete is being placed; easily and quickly removed; makes wall plumb and uniform in thickness.

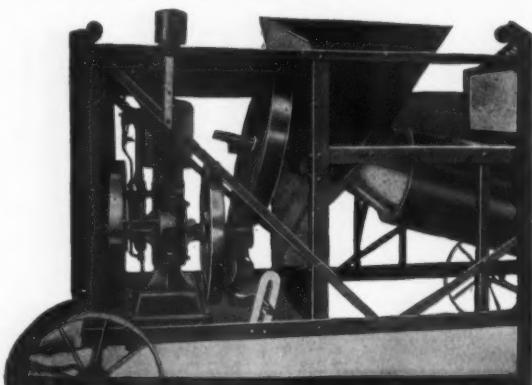
SAVES { LUMBER
LABOR
TIME



Write for circular explaining the system and the appliances:
 EXHIBITED AT BUFFALO—BOOTH 159.

Charles Dietrichs,

15 Kaufman Avenue,
 Little Ferry, New Jersey.



THE DEMOREST LITTLE GIANT MIXER

On a 5 mile sewer job the contractors estimated that they could save \$2,000.00 in moving expenses alone by using the LITTLE GIANT, besides putting in the work at 50% the cost with any other machine. Isn't it about time you "got wise" and saved some of the good dollars you are paying out. ONLY RESULTS count. CLAIMS of manufacturers amount to nothing.

WRITE FOR PRICES

BALLOU MFG. CO., 35 High St., Belding, Mich.

"The Svenson is Easily the Simplest and Fastest Mixer Ever Built"

Quit wasting money and making bad concrete with that "batch" machine. Don't fuss and lose time with complicated mixers. Let us tell you about this simple, strong machine.

The Svenson Concrete Mixer

Has only five moving parts, all on one shaft. It keeps going and it keeps the men going.

We want to tell you our ideas on proper mixing, for the "Svenson" mixes dry, then wet—the only scientific way. And it proportions the mix positively, just the way you set it.

Send for Catalogue.

Svenson-Shuman Machine Co.,
 602 Bessemer Bldg., PITTSBURGH, PA.



Tell 'em you saw it in ROCK PRODUCTS.



Pat'd No. 811518.

Make Money

The Price is Right. The Brick are Right.

More Peerless Machines now in use producing a profit to the owners than all others combined.

The people who use the "Peerless" know its profit-making qualities. We will send you a list of the concerns who have already made money by doing business with us, if you wish.

WRITE FOR ILLUSTRATED CATALOGUE.

Peerless Brick Machine Co.,

100 Lumber Exchange, MINNEAPOLIS, MINN.

PERFECTION IN BLOCK MAKING

If you wish to attain this you should combine these three important features:

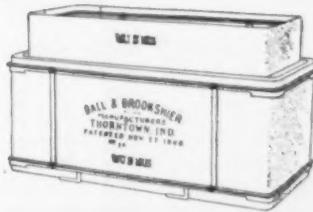
Wet Process Face Down Damp Curing

The PETTYJOHN INVINCIBLE Machine does this, and is the only machine that does. Tandem Invincible makes two blocks at once. Price \$65.00 and up. Single Invincibles, \$35.00 and up. With our Triple Tier Racking System green blocks can be stacked three high direct from machine with inexpensive home-made rigging. Plans and blue prints free to customers. It economizes space, reduces off-bearing distance and above all insures slow, even, damp and perfect curing and bleaching.

Write for our latest edition of "Stone Making," a book of valuable data, just off the press—FREE.

THE PETTYJOHN COMPANY

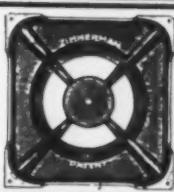
614 North Sixth Street Terre Haute, Indiana



Hoosier Cement Burial Vault Molds

All steel, no wood to shrink, swell and warp. Always ready, without repairs, and good for a lifetime. Best cement proposition known. 500 per cent profits. Telescopes and adjusts for making SEVEN sizes of cement vaults. Makes vaults with circle corners, preventing cracks. Corners strongest portion of walls. For particulars address

BALL & BROOKSHIER, Thorntown, Indiana
Patentees and Manufacturers. Ask for Circulars Nos. 9 and 10.



Ask your architect to specify The Zimmerman Patent Metal Base and Ventilator to prevent your porch columns and floor from rotting. Send for circular A. Thousands in use.

C. E. Zimmerman, Syracuse, N. Y.

THE HERCULES CONCRETE MIXER

*A Mechanically Perfect Mixer that Not
Only Mixes But Properly Proportions*

The Hercules Concrete Mixer is the product* of over two years of careful study and experiment. It is a wonderfully perfect mixer, which challenges the attention of all who desire perfection, not only in mixing, but in proportioning.

The Hercules is built to stand the racket. The frame is solid steel, the gears are



machined, and it is very easily operated with a 2½-power gasoline engine. It is the only continuous Drum Mixer made. The engine and all working parts are encased in a sheet steel hood, which affords complete protection from the elements.

The Hercules is absolutely perfect in proportioning of aggregates. It is an impossibility for this machine to make a mistake.

It is free from all such annoyances as sprockets, springs or chains. There are no clumsy paddles that break and no unreliable worms to clog. It is but the work of a moment to change from one proportion to another.

Full information sent to anybody interested. Write to-day.

Century Cement Machine Co.

MAKERS OF THE FAMOUS HERCULES CONCRETE BLOCK MACHINES

179 W. Main Street

ROCHESTER, N. Y.

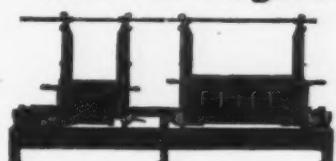
HERCULES SPECIAL CONCRETE BLOCK MACHINE \$120 AND COMPLETE OUTFIT, FOR ONLY



Made of Hercules Blocks

machine in order to make good blocks. A Hercules Special outfit is all you need to go into the Concrete Block business. Investigate the Hercules Special before you buy—it is the best machine and we can prove it.

Beautiful Illustrated Catalog Free
Hercules Regular Block Machine



The Hercules Regular.

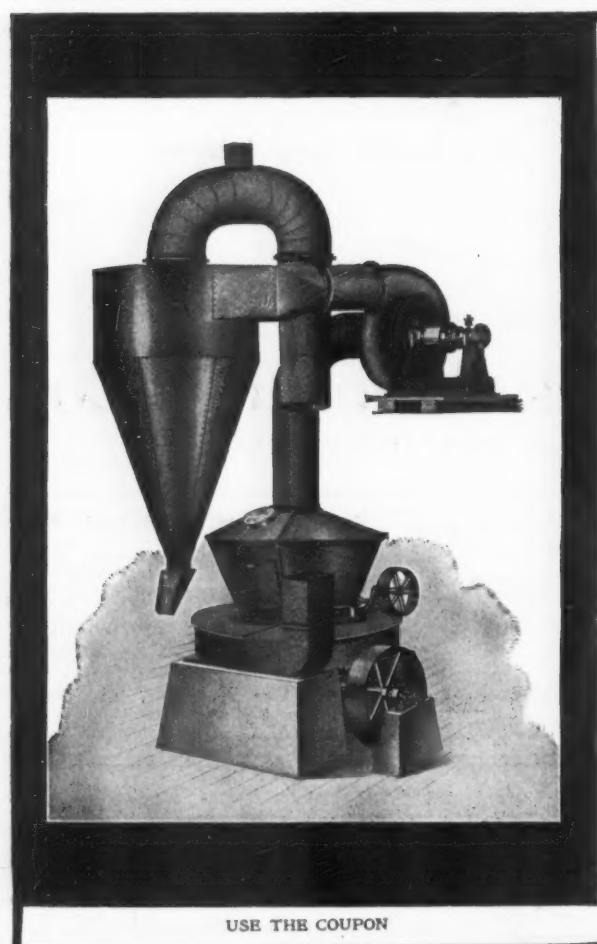
never gets out of order, and can always be depended upon at critical times to properly perform its duty.

CEMENT TOOLS

We manufacture tools for Cement Workers that are better than the ordinary. Ask for Tool Catalogue—It's Free.

Century Cement Machine Co.

179 W. Main Street, ROCHESTER, N. Y.



USE THE COUPON

SEVENTY THOUSAND DOLLARS SAVED

In ONE YEAR for One Customer

By use of the

Raymond System of Air Separation

We may not be able to do as much as that for you, but if you *grind to powder* in your factory or mill *any material*, it is probable that we can show you under our methods a substantial saving. You may not realize, may never have figured, how much you could save if you eliminated all the waste of material in your grinding process, if you were to produce *finer* powder, if you were to dispense with extra auxiliary machinery, if you did away with all bolters and screens, which are not only expensive under first cost but are costly to maintain, replace and keep in repair, to say nothing of cost of extra and under our system, unnecessary labor. We have successfully solved the pulverizing problem for more than two hundred of the largest concerns in the world.

The figures we give at the head of this advertisement represent our success in one instance. They are the customer's figures, not ours. Give us some of your "hard nuts" in the grinding question to crack. It will cost you nothing to confer with us. But first write for our book,

"MAKING AIR MAKE MONEY"

It will tell you more than we can tell you in this limited space:

**RAYMOND BROTHERS IMPACT
PULVERIZER CO.,
141 Laflin St., CHICAGO**



SIGN THIS COUPON, TEAR OFF AND MAIL

RAYMOND BROTHERS
IMPACT
PULVERIZER
CO.
141 Laflin St.,
Chicago

Please send your book
"MAKING AIR MAKE MONEY"
Name _____
Firm _____
Address _____

35

Limestone and Shale

FOR MANUFACTURE OF

Portland Cement

ON THE

Illinois Central Railroad

IN THE

WEST AND SOUTH

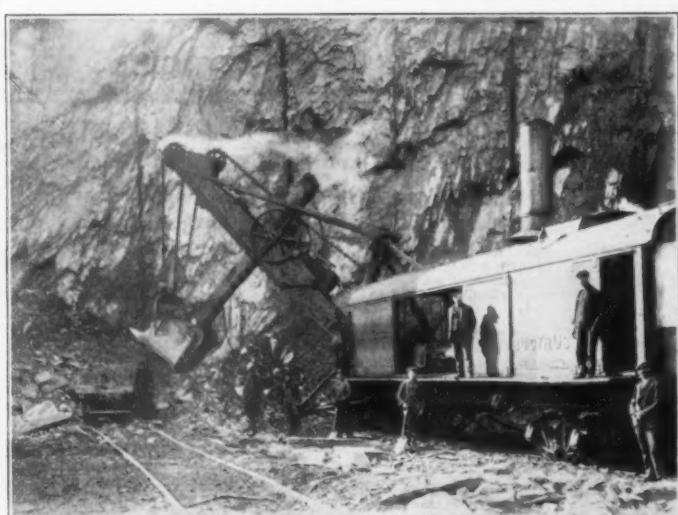
Coal, Water and Good Labor

For Full Particulars Address

J. C. CLAIR, Industrial Commissioner

I. C. R. R. CO.

No. 1 PARK ROW, CHICAGO



**95-B Bucyrus Steam Shovel
in
CEMENT ROCK**

We Build Steam Shovels for
Quarry Stripping, Cement Mining
or Loading Crushed Stone

**THE BUCYRUS CO.
SOUTH MILWAUKEE, WIS.**

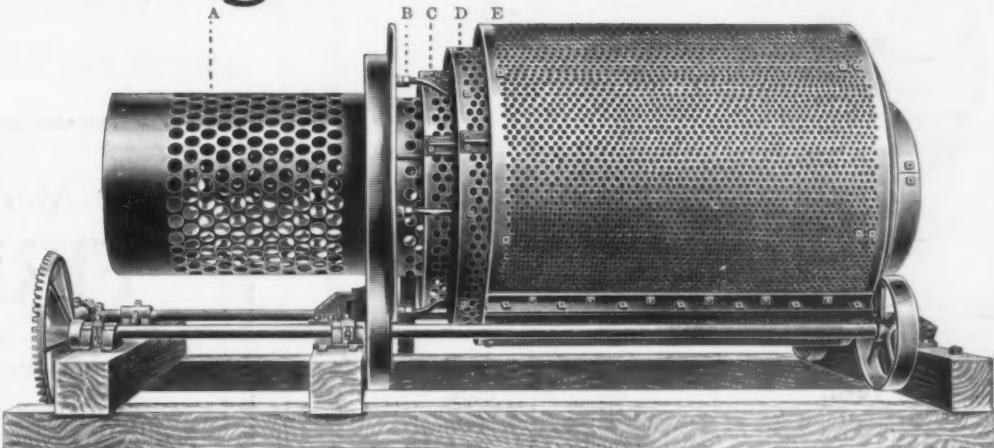
Tell 'em you saw it in ROCK PRODUCTS.

John O'Laughlin's Screen

For Granite, Stone, Sand,
Gravel, Coal, Coke
Or Anything Requiring Separation

The Separation or Grading of Rock and
Other Materials to Positive
Sizes Made Easy

THE O'LAUGHLIN SCREEN reverses the older style method of screening by discharging the material to be screened on coarse perforations first, and by this means separates the coarse from the fine material instead of the older style of separating the fine first, and consequently eliminates the wear on each concentric screen to the amount of rejections from that screen. It would be a low estimate to say that the wear on our style of screen is not 1-20 of what it would be on the older style and consequently the power of operating our screen in comparison with screens of the same capacity would be about 1-8. This screen is cradled in trunnions from treads on screen ends which are bound by a steel band 7-8" x 4", bearing on chilled and ground iron trunnions, always a true way of working castings against steel. The inside section unless distinctly specified is not more than 8" in length and consequently the weight of stone in screen is comparatively little. Each concentric screen, as well as center one can be reversed end for end when partly worn and will add greatly to the life of the screen. The screen is complete without sections "A", "C", "D", "E", or either of them, should not that many separations be required, this also adds to or takes from the cost of the screen. When placing an order or making other inquiries kindly state the number of separations, giving the size of perforations required in inches and fractions of an inch. As we have screens in about every state in the union, should this not appeal after a diligent study, we could refer you to the closest screen in operation to the location of the inquirer. Such a screen as shown in the above cut has been in operation in our limestone plant, Racine, Wis., for four years, where our output was on an average of 150,000 cu. yards, (2,500 lbs. per yd.) annually. It does not tax the capacity of the screen to separate 2,000 cu. yds. daily. The punchings of the screen are as follows:—first the coarse 4", the principle inside screen 2 $\frac{1}{2}$ ", second 1 $\frac{1}{2}$ " and the next 1". The cost of repairs in separating 600,000 cu. yds. was \$90.00, this outlay was for perforations for inside and second concentric screens. This incomparisons with the cost of maintaining the older style of screen which I have operated for 22 years and found the cost of maintaining was \$300.00 for each 100,000 cu. yds, against \$15.00 for an equal amount on this screen. You will find that there are more square feet of screening surface than two of the older style 16" x 40". I will personally guarantee that our screen will do everything that I have said here. I will further state that taking into consideration the perfect separation and the original cost of installing this screen in crushing plants with No. 5 crushers and upwards, this advantage with economy in power will pay for the discarding of the older style and installing our new style screen in about one year. We but ask you to give this a most scientific and critical examination and we earnestly solicit you to call in your most trusted and brightest mechanical engineer. We do not ask you to bar our competitor's best engineers in the manufacture of screens and crushing plants, namely—at Milwaukee, Wis., Cudahy, Wis., Chicago, Ill., Harvey, Ill., and Columbus, Ohio. Should they or any one prove before three competent engineers, selected in the usual way, that this screen is not constructed on the most scientific plans in every detail of any yet made, and produce the most perfect separation with the power to operate it, they are entitled to and will receive a substantial reward.



EVERY SCREEN IS
FULLY GUARANTEED

JOHN O'LAUGHLIN, Racine, Wisconsin

BROWNHOIST LOCOMOTIVE CRANE



Equipment of Sand Dock in the Harbor of St. Louis

Equipped with
"BROWNHOIST"
Grab Bucket

Such an equipment is
equally efficient in the
handling of broken
stone, gravel, etc., or
with or without the Grab
Bucket for the lifting
and transporting of
heavy materials.

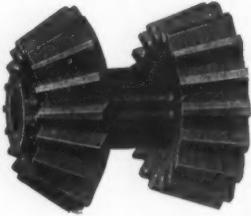
Write us for catalogues.

The Brown Hoisting Machinery Co.

Main Office and Works, CLEVELAND, O.

Branch Offices, Pittsburg, Pa., New York City

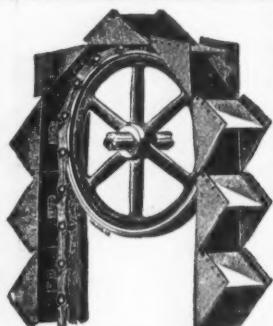
The Gear Question



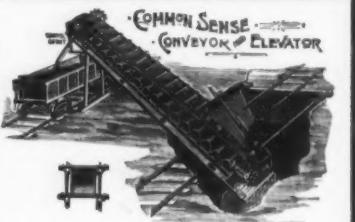
Whether one of quality or of price, is most satisfactorily solved at the "Nuttall Gear" factory, the biggest in the country, and solved quickly.

If in a hurry, wire us.

R. D. Nuttall Company
Pittsburg, Pa.



Send for Catalog 25



THE GENERAL CRUSHED STONE CO.,
So. Bethlehem, Pennsylvania,

have been using one of our Common Sense Elevators for six years—
capacity 400 tons an hour.

THE C. O. BARTLETT & SNOW CO. CLEVELAND, OHIO.

HIGH GRADE

FIRE BRICK

For Cement Works, Lime Kilns, Cupolas, Steel and Iron Works of every description :: :: :: ::

Louisville Fire Brick Works,

K. B. GRAHN, Prop.,
Highland Park, Ky. P.O.

Hand Made — Hard Burnt FIRE BRICK

are the best for
Lime and Cement Kilns

ADDRESS
Mitchell Clay Mfg. Co.

ALL SHAPES St. Louis, Mo.

CATALOG

The Buckeye Fire Clay Co.

Manufacturers of
Sewer Pipe, Flue Linings, Chimney
Tops, Fire Brick, Grate Tile, Ground
Fire Clay, Wall Coping, Etc.

UHRICHSVILLE, . . . OHIO



CEMENT-KILNS Lined with Our BAUXITE Lining Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

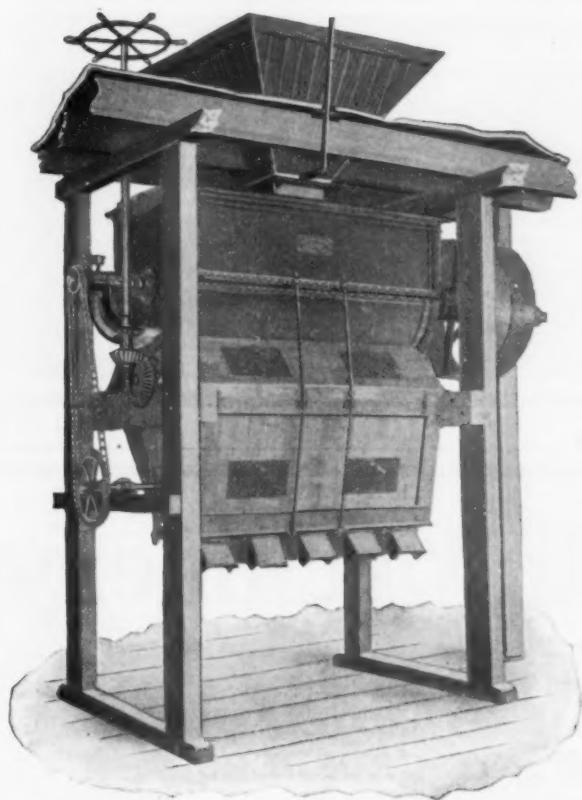
Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile
Fire Proofing, Flue Lining.

Laclede-Christy Clay Products Co.

ST. LOUIS, MO.



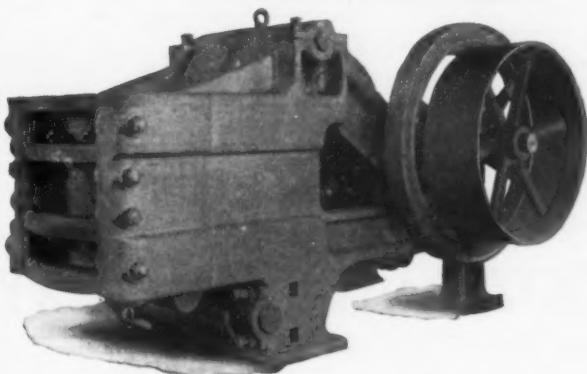
ENTERPRISE PLASTER MIXER

NOISELESS,
DURABLE and EFFICIENT.

For Mixing Hair Fibre, Wood Fibre and
Retarder with Dry Plastering
Materials.

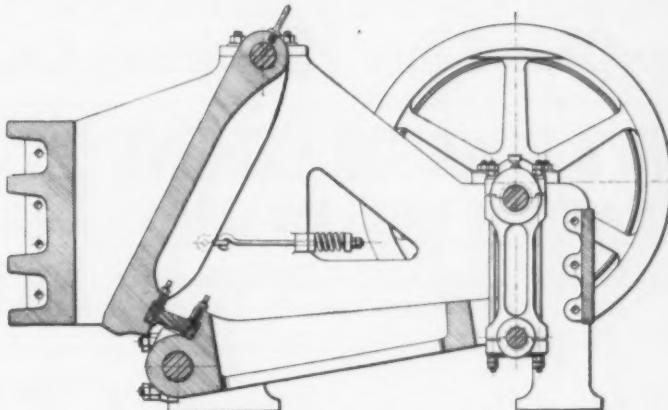
Calcin ing Kettles

Jaw and Rotary Crushers for Gypsum, Reels,
Vibratory Screens, Hair Pickers and Trans-
mission for applying power.



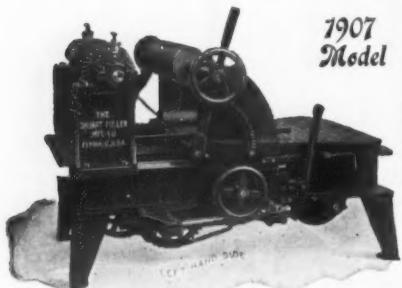
EHIRSAM NO. 4 JAW CRUSHER.

This machine will handle large chunks and reduce from 30 to 40 tons of Gypsum per hour to 2½-inch maximum or smaller if wanted.



NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.
The jaw opening at inlet is 18x28 inches.

The J. B. Ehrsam & Sons Mfg. Co.,
BUILDERS OF
COMPLETE EQUIPMENTS FOR PLASTER MILLS
Enterprise, Kansas

The Leonard Wood Fiber Machine1907
Model

Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 50 per cent as do the ordinary non-increasing feed machines. Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

The Shuart-Fuller Mfg. Co.

Successors to

The Elyria Machine Works,
Elyria, Ohio

THE SHUART-FULLER MFG. CO., Elyria, Ohio

Gentlemen:—What is the very best, cash-with-order price you will make on another Leonard Fiber Machine? We want no other machine but yours. It is all and more than you claimed for it, and is running steady ten hours every day and doing fine work.

Yours truly, GUARANTY WOOD FIBER PLASTER CO., Chattanooga, Tenn.

CUMMER CONTINUOUS PROCESS

FOR

**CALCINING
GYPSUM**PLANTS IN
OPERATION

Great Saving in Cost of Manufacture and Quality of
Product Guaranteed.

The F. D. CUMMER & SON CO., Cleveland, O.

Finest Line of Gypsum Machinery

MADE

KETTLE CRUSHER NIPPERS

ASK FOR CATALOG OF

MOGUL NIPPERS. OPEN DOOR POT CRUSHERS

Best Mills in the United States Have Them

DES MOINES MFG. & SUPPLY CO., Des Moines, Iowa, U. S. A.

SPECIAL MACHINERY AND FORMULAS

FOR THE MANUFACTURE OF

**WOOD FIBER PLASTER, FIRE PROOF-
ING AND KINDRED PRODUCTS.**

The Ohio Fiber Machinery Co. J. W. VOGLESONG,
GENERAL MANAGER. **Elyria, Ohio.**

We furnish the latest improved FIBER MACHINE, (fully patented), also FORMULAS, on a reasonable proposition. The strongest companies and oldest manufacturers are operating under my contracts.

WRITE FOR TERRITORY.

**KING'S WINDSOR CEMENT
FOR PLASTERING WALLS AND CEILINGS**

Buffalo Branch: CHAS. C. CALKINS, Manager
322 W. Genesee Street

Elastic in its nature, can be applied with 25 per cent. less labor and has 12½ per cent. more covering capacity than any other similar material. * * * * *

J. B. KING & CO., No. 1 Broadway, New York

CRUSHERS

for soft rocks, burnt lime, etc.

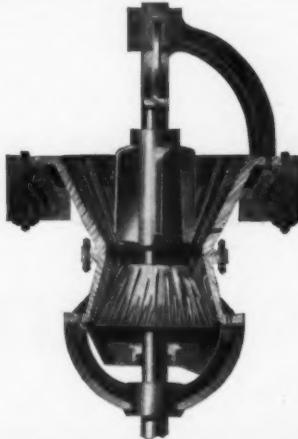
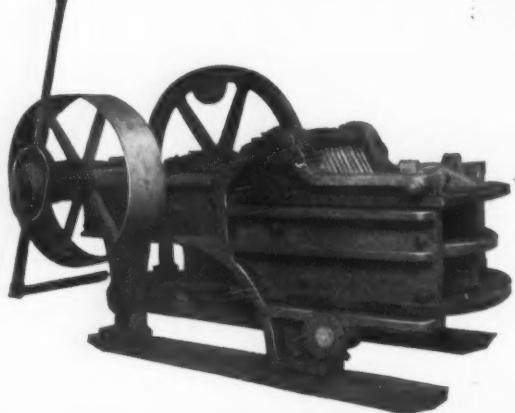
GYPSUM MACHINERY

We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting, etc.

**SPECIAL CRUSHER-GRINDERS FOR LIME
HYDRATORS**

BUTTERWORTH & LOWE

17 Huron Street, GRAND RAPIDS, MICH.



Tell 'em you saw it in ROCK PRODUCTS.

**Does Quality Appeal to You?
Does Prompt Service Appeal to You?
Does Reliability Appeal to You?**

Then Buy

**Your Stucco and
Wall Plasters of**

**The
American Gypsum Co.,**

Manufacturers of

**High Grade Stucco. "Anchor" Cement Plaster.
"Anchor" Wood Fibre Plaster.
Superfine Calcined Plaster.**

General Offices, Garfield Building, CLEVELAND, OHIO.
Mills, Port Clinton, Ohio

LET OUR POLICY
of manufacturing a uniform and thoroughly reliable stucco

INSURE

you against producing an inferior wall plaster

The Niagara Gypsum Company

MANUFACTURERS OF



STUCCO
NEAT CEMENT PLASTER
WOOD FIBRE WALL PLASTER
SANDED WALL PLASTER
FINISHING PLASTER
PREPARED FINISH
SUPERFINE PLASTER

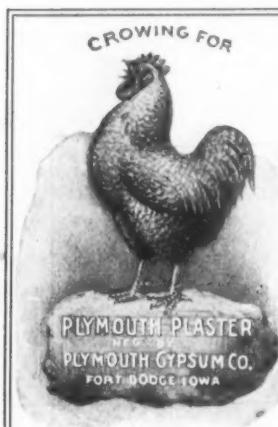
Our electrically equipped mines and mills are now in operation with a capacity of 300 tons per day, we assure you of prompt service.

Mines and Mills: Oakfield, N. Y.

General Offices: 597 Michigan St., Buffalo, N. Y.

The Sheridan Stucco Retarder Co. Toledo, O.
 MANUFACTURERS OF
STUCCO RETARDER

Quality, Price, Shipping Facilities, and Prompt Attention, Unexcelled by any. Drop us a line for Prices.



**PLYMOUTH
CEMENT
AND
WOOD FIBER
PLASTER**

The Brand that's Made from Pure
Gypsum Rock.

WRITE US FOR PRICES AND
ADVERTISING MATTER.

Plymouth Gypsum Co.
Fort Dodge, Iowa

Intelligent Advertising
Produces Business } Can You
Use this Space?



**PLAIN AND
ORNAMENTAL
PLASTERING**

EQUAL IN QUALITY TO FOREIGN MAKES

MILLS AND QUARRIES:

MEDICINE LODGE, KANSAS
SUN CITY, KANSAS

EASTERN OFFICE: . . CLEVELAND, OHIO

**BEST
BROS.**

**Keene's
Cement**

FOR

**Stucco
Retarder**

Strong
Uniform
Fine Ground

RETARDER

We are the oldest Retarder firm
in the United States, and above
is our motto. New fire-proof
plant and prompt service.

FREE SAMPLE ON REQUEST

Chemical Stucco Retarder Co.

WEBSTER CITY, IOWA.
INCORPORATED 1895

**THE
"INDEPENDENT"
BRAND**

Is Manufactured Only by
American Independent Gypsum Co.
Fort Dodge, Iowa

UP-TO-THE-MINUTE PLASTER MAKERS

**Works Fine. Try It
You Will Like It**

If you want your plaster to be of the
best grade you will use our Retarder.

Elcessor Stucco Retarder Co.

Manufacturers of
**Highest Grade Retarder for
All Kinds of Wall Plaster**

Main Office and Works
First St. and Monongahela River, Braddock, Pa.

Shipments made via N. Y. C. P. R. R. and Bessemer & Lake Erie Railroads.
Samples sent on request.

STUCCO—Lycoming Calcining Company

Garbutt, Monroe County, N. Y.

Enlarged, Re-equipped, Better and Larger than ever. Capacity, 250 tons per day. First Stucco mill built at Garbutt. Now located on two R. R. systems. Shipping facilities unsurpassed. Ten wall plaster Companies now using our Stucco exclusively, under contract. Write for price.

MAIN OFFICE,

WILLIAMSPORT, PENNA.

RETARDER Wood Fiber

THE OHIO and BINNS RETARDER CO.
PORT CLINTON, OHIO

Reliable Stucco Retarder=Strong=Uniform in Strength=

Duplicate power plant (electric and steam power) installed so as to preclude any possibility of shut down and consequent shut down of mixers who depend upon us for their supply of Retarder. We have a capacity large enough to supply every retarder user in the U. S. and Canada, and some to spare for Europe. Our mills are fireproof in every particular. Write us for prices and information.

THE OHIO and BINNS RETARDER CO.
PORT CLINTON, OHIO

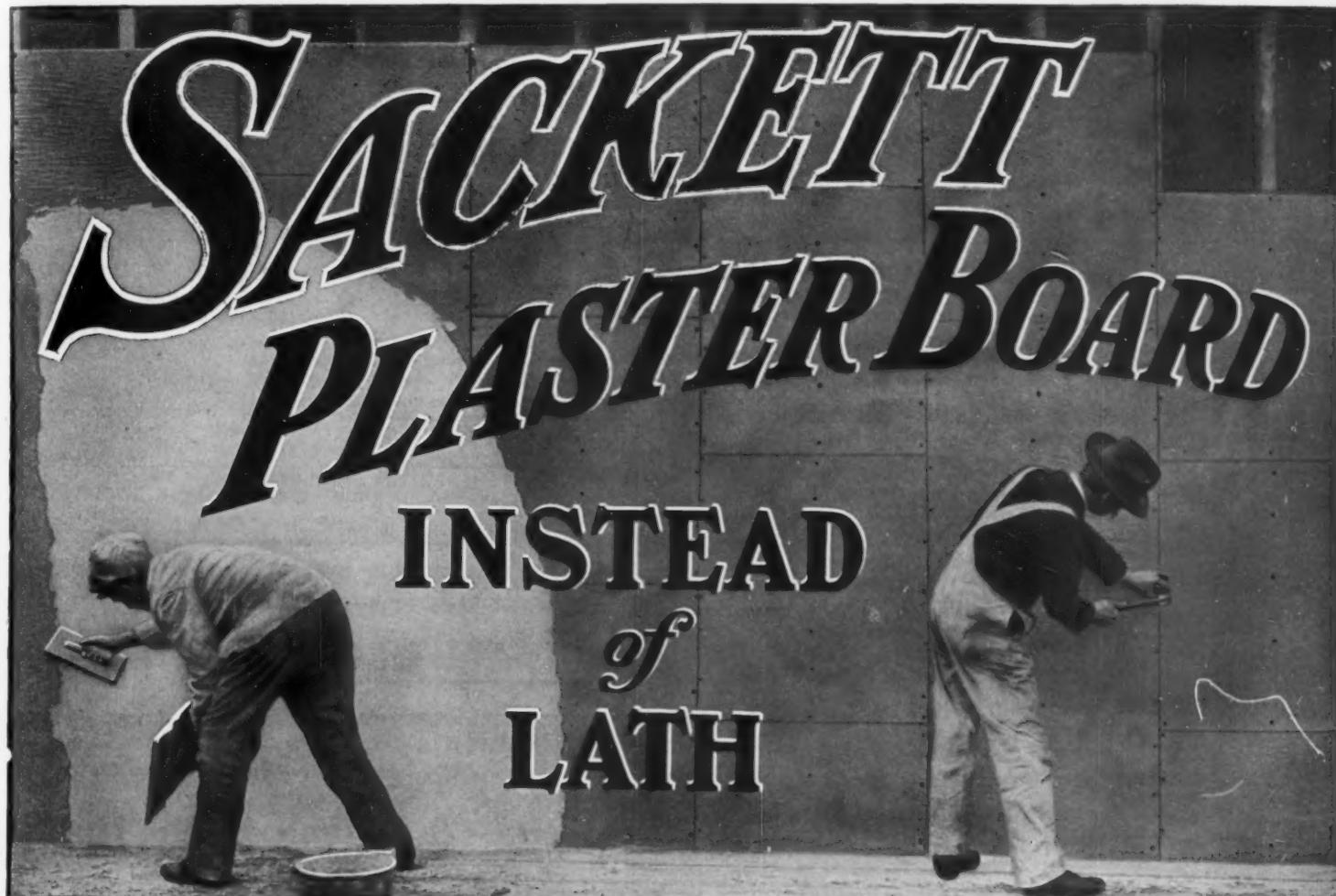
Empire Gypsum Co.

The Empire Gypsum Company's new mill, with capacity of 200 tons daily, is in operation and they are prepared to promptly furnish the best quality of Empire Stucco, Empire Neat Plaster, Reliance Wood Fiber Wall Plaster and Excelsior Wall Plaster Sanded.

Garbutt, Monroe County, New York.



Tell 'em you saw it in ROCK PRODUCTS.



FIREPROOF AND ECONOMICAL

SACKETT PLASTER BOARDS have been successfully used since 1891 in thousands of buildings of all classes, including small cottages, prominent hotels, costly residences, churches and theaters.

Walls and ceilings of Sackett Plaster Boards will be DRY AND READY IN HALF THE TIME required when lath is used, as less than half the quantity of water is needed.

Less moisture means less damage from warped and twisted trim and woodwork.

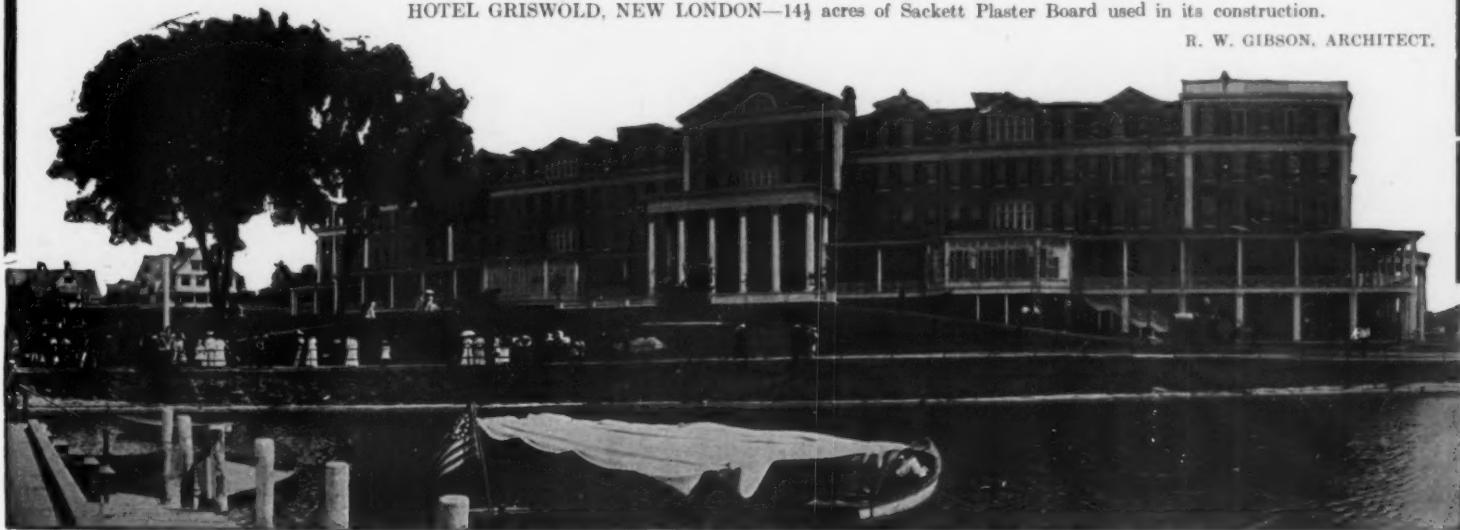
Their superior insulating qualities make warmer houses with less fuel. The first cost is no more than good work on wood lath, and less than on metal lath.

Booklet showing buildings all over the country where these boards have been successfully used with SAMPLES and name of nearest dealer furnished on application to any of the following General Distributors.

UNITED STATES GYPSUM CO. | GRAND RAPIDS PLASTER CO. | SACKETT PLASTER BOARD CO.
CHICAGO CLEVELAND MINNEAPOLIS | GRAND RAPIDS, MICH | 17 BATTERY PLACE, NEW YORK CITY

HOTEL GRISWOLD, NEW LONDON—14½ acres of Sackett Plaster Board used in its construction.

R. W. GIBSON, ARCHITECT.



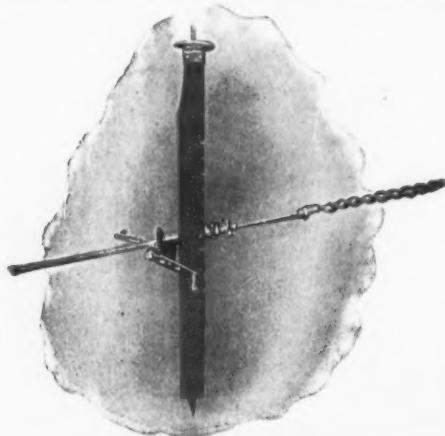
Tell 'em you saw it in ROCK PRODUCTS.

FARREL ORE AND ROCK CRUSHER

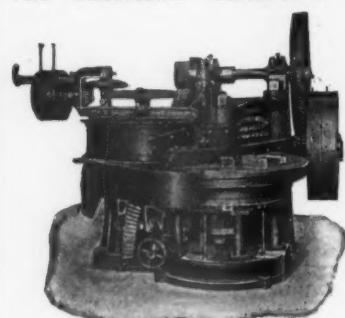
USED IN ALL PARTS OF THE WORLD - LARGE RECEIVING CAPACITY - SPECIALLY DESIGNED AND CONSTRUCTED FOR HARDEST KIND OF WORK
COMPLETE CRUSHING PLANTS OUR SPECIALTY

• SEND FOR CATALOGUE •

EARLE C. BACON, ENGINEER.
 FARREL FOUNDRY & MACHINE CO. HAVEMEYER BUILDING, NEW YORK



The American Sandstone Brick Machinery Company, SAGINAW, MICH.



Improved Saginaw Rotary Presses are now being built right or left hand, with extra table for making face and fancy brick, on which double pressure is exerted. Our patented brush does the work of one man, and keeps the plunger plates clean.

DON'T confuse our practical system with the so-called Scientific Systems. We confine ourselves to the manufacture of machinery for making brick from sand and lime; installing the complete plant starting and operating at our expense until at least 100,000 brick are made before asking for a settlement.

Our Plants are installed under the supervision of practical engineers who know how Sand-Lime Brick should be made, and can be made.

We have practical plants running successfully, to show to prospective investors.

We are Not Scientists.

We produce results, because we are the oldest practical Sand-Lime engineering company doing business in the United States, and we defy contradiction. Incorporated April 1902.

HOWELL'S Celebrated Ball Bearing Heavy Geared Post Drills for boring anything that an Auger will penetrate.

Awarded Gold Medal, St. Louis.

We make 40 different styles machines run by Hand, Compressed Air and Electricity for boring Fire Clay, Coal, Rock, Rock Salt, Gypsum and Plaster Rock. Send to day for our handsomely Illustrated Catalogue.

HOWELL MINING DRILL CO., Plymouth, Pa. U. S. A.
 (ESTABLISHED 1878.)

Modern Grinding Machinery

KOMINUTERS for granulating
TUBEMILLS for pulverizing

Davidson Tubemill especially
 adapted for Sand-Lime
 Brick Work.

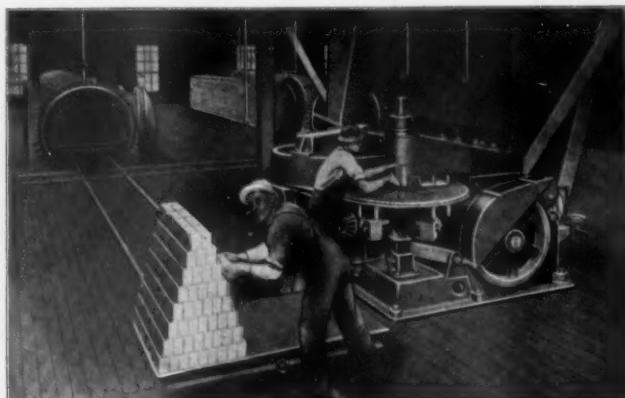
Silex Linings for Tubemills
 Best Quality Dana Flint Pebbles
 Forged Steel Balls

F. L. SMITH & CO.
 ENGINEERS

41 Cortlandt St., NEW YORK

The Cleveland Brick Machinery Co. Wickliffe, Ohio.

Manufacturers of
Sand Lime Brick Machinery Only



We claim to have the finest Sand Lime Brick Press that has yet been brought out, and we are sure we can convince you if you will see our machinery in operation.

Designers and Builders of Sand Lime Brick Plants.

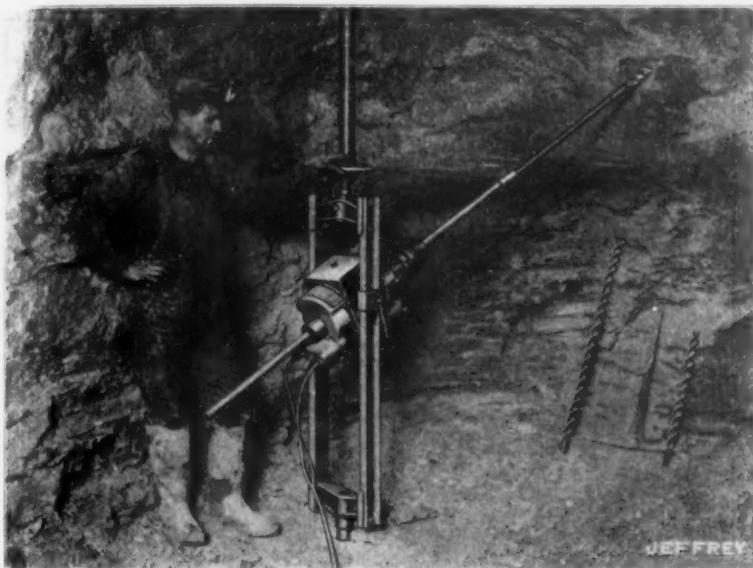
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The feed screen passes through the center of the armature shaft, which is hollow, and is driven by a double set of gears which halve the wear. This arrangement, which is found in no other machine, causes the drill to balance perfectly.

A friction release permits the feed nut to slip, and stops the forward movement of the bit in case excessive resistance is offered. This friction slip permits material to be drilled which would be impracticable with a positive feed.

Changes in speeds and rates of feed are easily and quickly effected.

THE JEFFREY

A5

Electric Rotary Drill

With Flame-Proof Motor

For

Coal, Slate, Shale, Gypsum, Salt, Soft Rock and other semi-hard or other Tough Material.

This drill is designed on distinctly original lines and for heavier work than has heretofore been found practicable with rotary drills.

The motor is of the most approved type, and is fully enclosed in a damp and flame proof casting. The armatures are drum wound with machine formed coils, the pole pieces are of laminated sheet steel, and the windings of both the armature and field coils are insulated in the most thorough and approved manner. The power of the motor and strength of the machine throughout are ample to overcome any resistance the bit will stand up under.

THE JEFFREY MFG. CO.

Columbus, Ohio, U. S. A.

New York
Pittsburg
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Sand-Lime Brick Machinery

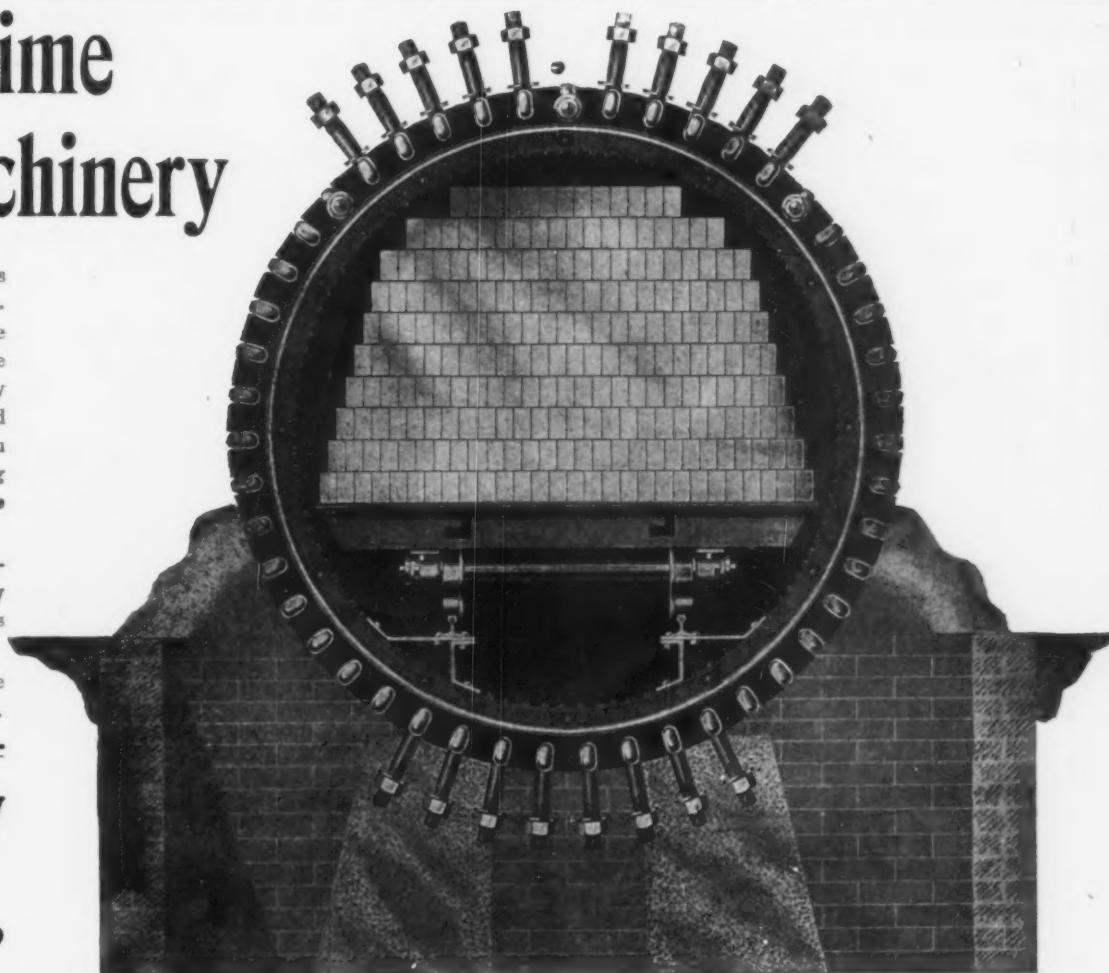
Our Sand-Lime Brick Machinery is at least a little better than any other. We have testimonials to show it. We build it all in our own factory and are sure of its quality. We are the only firm doing this. We will design and equip your entire plant or will sell you parts of your equipment. Our catalog describing and illustrating our full line will be sent upon request.

We also build a full line of machinery and appliances for making Clay Products, Cement and Pottery, Dryers and Dryer Apparatus.

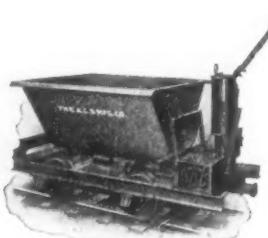
Everything we sell we make. We therefore know its quality to be right.

The American Clay Machinery Co.

WILLOUGHBY, OHIO
U. S. A.



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CARS
FOR



No. 217-E
Side Dump Car
Equipped with Motor

QUARRIES,
MINES,
CEMENT
WORKS
AND
GENERAL
USE



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Turntable; Patented

SWITCHES,
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No. 600
Steel Dumping Bucket

RAIL,
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THE ATLAS CAR & MFG. CO.
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JUST OPENED

UNDER NORTH RIVER

This Stupendous Work
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Giant Portland Cement

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THE STANDARD AMERICAN BRAND

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Productive Capacity for 1908 over 14,000,000 bbls.

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